THE IRON AGE

A Review of the Hardware, Iron, Machine [illegible] Trades.

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THE IRON AGE

THURSDAY, JUNE 16, 1904.

The Niles Eighty-Inch Driving Wheel Lathe.

A new driving wheel lathe, designed throughout with a view of performing the very heaviest duty on work of the large sizes, has just been placed on the market by the Niles-Bement-Pond Company. The machine is the product of the Niles plant at Hamilton, Ohio. It has been found by the builders of this machine that a source of considerable trouble in connection with the production of driving wheels as large as 80 inches in diameter is that the strength and stiffness of the work put in the large machines are inferior to the machine itself. To overcome this methods have been devised in the machine illustrated to hold the wheels solid with the face plate and prevent their yielding to the strain incident to the cut, and also to prevent the deflection of the axle. The builders state in this connection that this difficulty is being encountered in a number of machine tools at the present time, for, by a process of evolution, the metal working machinery has been getting heavier and more powerful from year to year, until at the present time in some instances the capacity of the machine is out of proportion to the stiffness of the work itself, and it becomes largely a question of so steadying the work that the power in the machines can be effectively applied.

The machine swings 80 inches over the bed and 72 inches over the carriages. The face plates are 80 inches in diameter, each being driven by a steel pinion engaging into an internal gear on the face plates, leaving the outside of the face plate smooth. The pinions are attached to auxiliary shafts in the head stock, and on the opposite end of each auxiliary shaft is mounted a spur gear driven by a pinion on the main driving shaft, which traverses the length of the bed. Heretofore, in driving wheel lathes, one of the sources of weakness has been the long driving shaft, causing chattering in the machine by its torsion. The method adopted in this machine of gearing the driving shaft into the face plates relieves the shaft of a very large percentage of the strain found in the usual construction. In addition to this the long shaft itself is made of large diameter, so as to increase the value of the shaft not less than four-fold of what it is on the ordinary construction of driving wheel lathe.

The main driving motor is placed at the left hand end of the machine, as shown in Fig. 1, and by suitable gearing transmits motion to the face plates both for tire turning and journal turning. The face plate speeds for tire turning are designed to give cutting speeds ranging from 10 to 22 feet per minute on diameters ranging from 48 inches to 68 inches on the tread. The motor has a capacity of 50 horse-power and runs 600 revolutions per minute operating at 220 volts. It is of the variable speed type, having a speed range of 1:3 by the multiple voltage system. There is also one change of speed by gearing, giving in all a wide range of speeds to the face plates. The axle is put into the machine on centers, each head stock being provided with a sliding spindle in which the centers are inserted. Each face plate is provided with an opening of sufficient capacity to insert the crank pins, and by this means the wheels are brought very close to the face plates. The right hand head stock is moved into position by a 3½ horse-power motor.

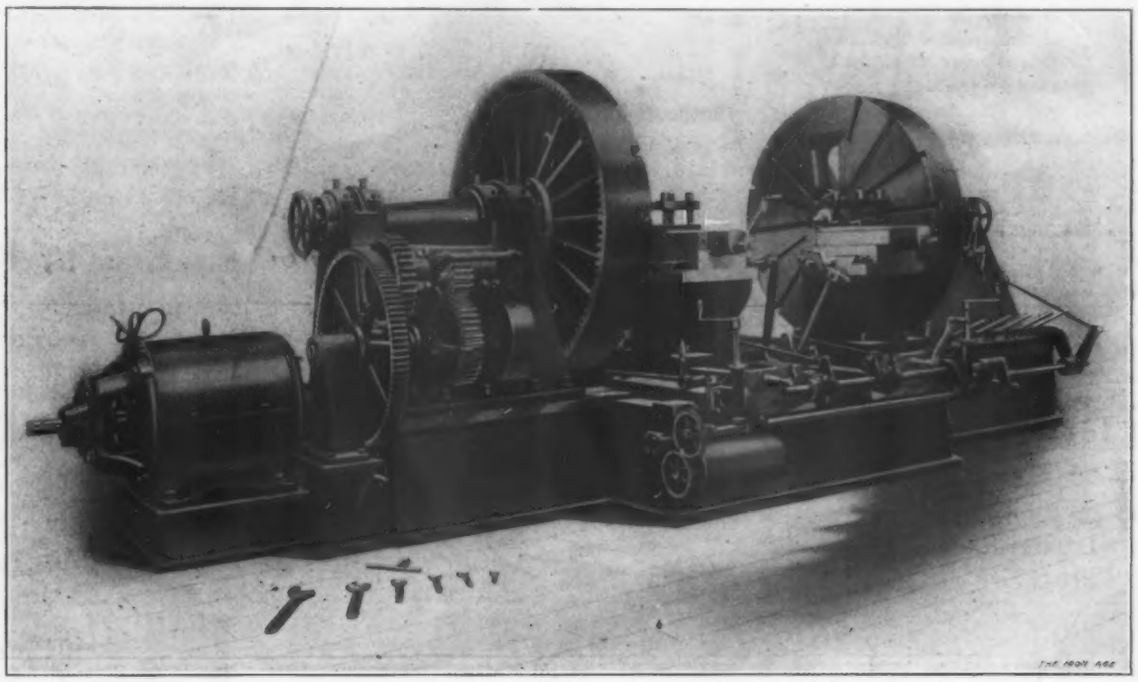


Fig. 1.—View from Forward End of the Machine, Showing the Main Driving Mechanism.

In addition to the drivers attached to the face plates and engaging on the arms in the wheel provision is also made to utilize the crank pin to assist in driving the work. For this purpose wedge shaped steel slides are inserted in the openings of the face plates above mentioned, which, by means of screws projecting to the rim of the face plates, can be adjusted with great nicety to bear against the crank pins.

As the carriages and tool rests are of considerable weight, and the movement of the carriages along the bed would be too cumbersome by hand, each of the carriages engages with an adjusting screw lying lengthwise in the bed by an opening and closing nut and operated by the 3½ horse-power motor mentioned above. This enables each carriage to be moved on the bed by power in either direction, making the adjustment of each carriage independent of the other. The feeds are operated by an adjustable crank plate, driven by gearing on the right hand head stock. From thence the motion is conveyed by a rock shaft placed on the front of the bed and connecting by suitable ratchets to the feed screws. All of the feed connections are made extra strong, and the feed screw ratchets, pawls and ratchet casings are made of steel forgings to enable them to successfully stand the strain

imposed upon them. The face plate spindles are of gun iron castings. Both the front and the rear bearings of the spindle are fitted with heavy bronze bushings made in halves. Bronze bearings are similarly provided for all the driving shafts. All the smaller pinions are of forged steel, and the larger gears and gears on the face plates are made of good quality gun iron or semi-steel castings.

Electric Smelting in Europe.

From a recent issue of the *Canadian Manufacturer* we take the following article, which embodies the principal facts in the report made to the Canadian Government by the commission, headed by Dr. Eugene Haanel, sent to Europe last autumn to investigate electric smelting processes:

The Keller Furnace.

By far the most important experiments witnessed by the commission were those made by Mr. Keller of Keller, Leleux & Co., Livet, France. Some 90 tons of iron ore were used to demonstrate the economic production of pig iron by the electric process. The furnaces employed for these experiments were the furnaces used in the regular work of the company of making by the electric process the various ferros, such as ferro-silicon, ferro-chrome and so forth. The company at the time of the visit of the commission were under contract to furnish ferro-silicon to the Russian Government, but generously interrupted their pressing regular work to undertake the making of experiments for the commission. The furnace employed is of the resistance type, and consists of two iron castings of square cross section, forming two shafts communicating with each other at their lower end by means of a lateral canal. The cases are lined with refractory material. The base of each shaft is formed by a carbon block. These blocks are in electric communication on the exterior of the furnace by means of copper bars. The carbon electrodes to which electric current is distributed pass two-thirds of their length into the shaft. The electrodes are prisms 72 cm. (28 inches) in diameter and 135 cm. (53 inches) long. Three sets of experiments were made as follows: 1, Electric reduction of iron ore and obtaining different classes of pig, gray, white and mottled. 2. Electric reduction of iron ore containing a definite amount of carbon in the charge, with a view of ascertaining the amount of electric energy absorbed in the production of 1 ton of pig iron. 3. The manufacture of ordinary steel of good quality from the pig manufactured in the preceding experiments.

The different classes of pig iron were obtained without difficulty, and the furnaces throughout the experiments worked quietly and without the slightest accident, the gas discharging on top in flickering flames, showing that the gas resulting from the reduction of the ore escaped at low pressure. The workmen employed were ordinary Italian laborers without any special training. A number of castings, such as columns, pulleys, gear wheels, plates, &c., were made, the metal drawn directly from the furnace. The castings showed sharp edges, a comparatively smooth surface, and were sound throughout. For the determination of the electric energy absorbed, the volt meter and ammeter employed to measure the volts and amperes were calibrated in the laboratory of the director of the electrical department of the University of Grenoble, who also ascertained the power factor of the alternator furnishing the electric energy. The electric energy absorbed per ton of pig was found to be 0.226 horse-power years.

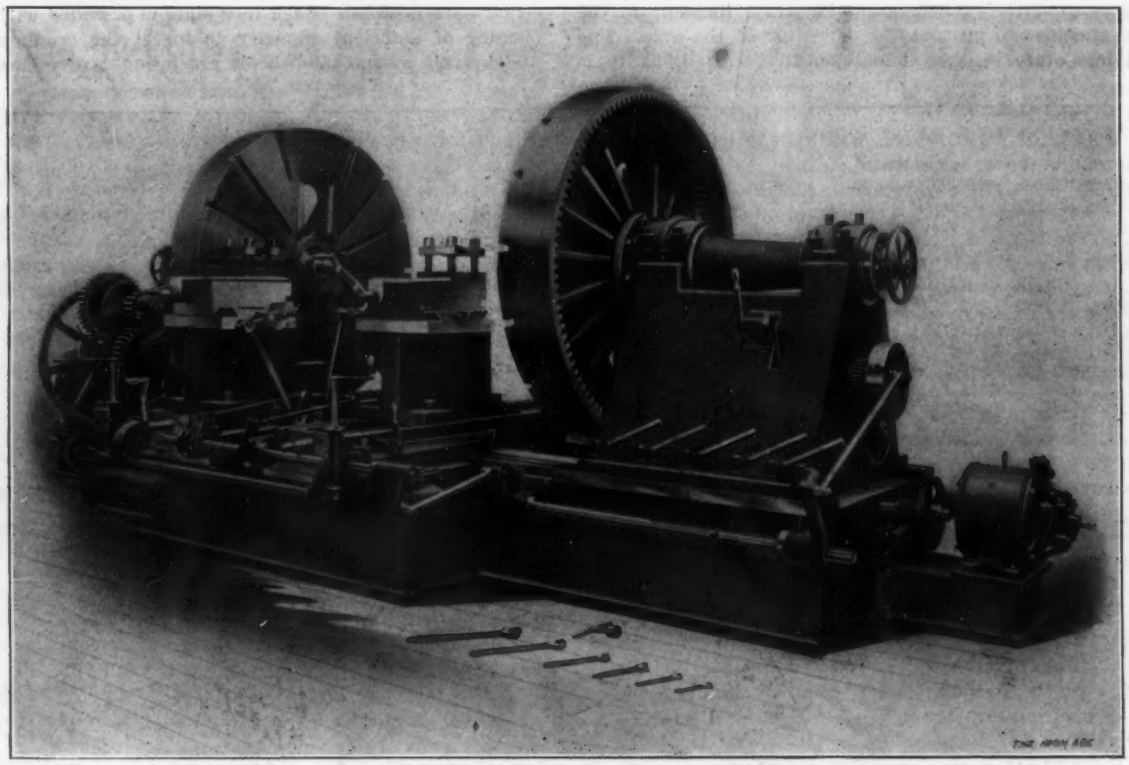


Fig. 2.—View from Rear End of the Niles 80-Inch Driving Wheel Lathe.

The following are the figures which go to make up the approximate cost of producing a ton of pig iron: Ore (hematite), metallic iron 55 per cent., 1842 tons at $1.50 per ton, $2.76. Coke for reduction, 33 tons at $7 per ton, $2.31. Consumption of electrodes at $5 per 220 pounds, 77 cents. Lime, 30 cents. Electric energy 0.226 horse-power years at $10 per e. h. y., $2.26. Labor at $1.50 per day, 90 cents. Different materials, 20 cents. General expenses, 40 cents. Repairs, maintenance, &c., 20 cents. Amortization (machinery and building), 50 cents. Exclusive of royalty, $10.60.

To satisfy the commission, Mr. Keller made experiments to illustrate his process of making steel. The details of the operation and the figures relating to his experiments are in the hands of Professor Harbord, the English metallurgist, who accompanied the commission.

In regard to other processes it was found that Mr. Harmet of St. Etienne, who published papers and obtained patents on the electric process for smelting iron and making steel, and Mr. Gin of Paris, who has obtained a pat-

ent for the production of steel from scrap, have as yet no plant in operation by which their methods might be tested.

The Opinion of the Commission.

In his general conclusion, Dr. Haanel says: "It must be pointed out that the results obtained at Livet were the results of experiments in furnaces not specially adapted to the work required to be done. With the improved furnaces of which the commission has secured detailed drawings, permitting on account of higher column of charge a more effective use of the reducing power of the carbon monoxide evolved, and the employment of machinery for charging the furnace to reduce the cost of labor, a much better figure than the one given will result."

The processes of electric smelting must yet be regarded as in the experimental stage, no plant existing at present where iron ore is commercially reduced to pig by the electric process. The more remarkable therefore it appears that experiments made off hand, so to say, in furnaces not at all designed to be used for the production of pig, should give a figure of cost which would enable an electric plant properly designed and managed to compete with the blast furnace. It is, moreover, reasonable to expect that, as experience in electric smelting accumulates, the design of the electric furnace best suited to the conditions of the high temperatures with which the metallurgist has to deal will undergo changes which will reduce the absorption of electric energy to a minimum. The electric engineer will also be called upon by the new industry to design electric plants specially suited to the conditions of electric smelting. When it is considered that the electric process is applicable to the smelting of all other ores, such as copper, nickel, silver, &c., that the furnaces are of simple construction and the regulation of the heat supply is under perfect control, we may expect that the application of electric energy to the extraction of metals from their ores will not be long delayed, and that familiarity with handling large currents, and experience gained in electric smelting will result in displacing some of the costly and complicated methods by comparatively simple and economic processes. The immediate effect of a plant erected for the smelting of iron ores which will demonstrate the economic production of pig and the making of steel will arouse the faith of the industrial world in the new metallurgy, and other industries dependent upon electricity as the agent or to which electricity can be applied will follow as a consequence in the wake of this power plant.

At Gysang, Sweden, steel of superior quality is made by the smelting together of charcoal, pig and scrap in an electric furnace of the induction type—that is to say, a furnace without electrodes. This process corresponds to the crucible steel process, but it has certain advantages over the latter in that the melted materials at no time during the operation are exposed to gases, some of which when absorbed deleteriously affect the quality of the product. The furnace worked quietly and regularly, producing on the average 4 tons of steel in 24 hours. Tapping occurring every six hours, 0.116 electric horse-power years were required per ton of product. The cost at the rate of $10 per electric horse-power a year would be $1.16 per ton of product. At Kortfors, Sweden, the Heroult process of making steel is in operation, but the furnace is at present employed in the making of ferro-silicon.

At Lapras, France, steel is also made from melted scrap. The process differs from that at Gysang in that it permits of the purification of the materials employed, two slags being made for that purpose, and carburization is effected in the furnace by carbon briquettes. The furnace is of the tilting pattern, consisting of an iron casing lined with dolomite brick. The bottom of the furnace is filled on top of the lining with crushed dolomite, upon which the charge reposes. Two electrodes pass through water cooled joints in the roof of the furnace. The electrodes are vertical and parallel, and are adjusted verticularly either by hand or a specially constructed regulator. An alternating current of 4000 amperes of 110 volts is distributed to the electrodes. Different classes of steel are made by the company at a cost per electric energy absorbed of $1.54 per ton of ingot. The selling price of the steel varies from 363 francs 60 centimes to 123 francs 60 centimes per ton, depending upon quality. Interesting experiments were made for the commission at this plant in the production of pig from the ore in a very simple furnace consisting of an iron box of rectangular cross sections, open on top and lined with refractory material. The bottom of the furnace in communication with the iron casing constituted one terminal of the electric circuit. A carbon electrode of square cross section and about 3 feet in length, placed vertically in the open top of the furnace, constituted the other terminal. By hand regulation this electrode could be lowered or raised within the furnace. Thirty charges of ore were made during the working, and 13 taps of metal and slag were taken.

The Aultman & Taylor Machinery Company at St. Louis.

The Aultman & Taylor Machinery Company, Mansfield, Ohio, are exhibiting at St. Louis by far the largest boiler exhibit ever made. It constitutes about 60 per cent. of the entire exhibitors' boiler plant at the Exposition. First are eight water tube 508 horse-power boilers, built to carry 250 pounds steam pressure, each boiler containing 5080 square feet of heating surface and equipped with the company's own chain grate stoker. Next are four 508 horse-power boilers, of 175 pounds steam pressure, each equipped with their own chain grate stoker. Then come eight 400 horse-power boilers, built to carry 175 pounds steam pressure, each boiler containing 4000 square feet of heating surface and equipped with the Aultman & Taylor chain grate stoker. All of these boilers are of the Cahall horizontal water tube type, and each installation as enumerated is equipped with an independent induced draft apparatus. The coal is fed to the stoker hoppers by storage tanks and the conveyor system. They also have three 250 horse-power Cahall vertical boilers, each boiler containing 2536 square feet of heating surface and equipped with the Aultman & Taylor chain grate stoker. Each of these three boilers has an independent stack and is operated with natural draft.

The total is 8014 horse-power of boilers and stokers, all of which are in operation and are developing in the neighborhood of 12,000 boiler horse-power, and supply steam for over 25,000 engine horse-power. The high presure boilers are used for operating the steam turbines that are located in the Palace of Machinery. All the boilers and stokers are located in the central portion of the Steam, Gas and Fuels Building, which is directly west of the Palace of Machinery.

In addition to the working exhibit the Aultman & Taylor Company have a very large nonworking exhibit situated in Block 53, on the northwest corner of the Palace of Machinery. This exhibit consists of one 125 horse-power horizontal water tube boiler, equipped with the Aultman & Taylor superheater and chain grate stoker. the boiler being bricked upon one side, leaving the other side exposed, so that the entire system can be examined. They also have one cross drum type horizontal water tube boiler of 100 horse-power capacity, bricked up entirely on one side, and also one 100 horse-power Cahall vertical water tube boiler, bricked up in similar manner. This exhibit is an extremely attractive one, due to the fact that it permits of a thorough study of the different types, and the travel of the gases can be easily followed. In addition to these three full sized boilers they have all of the parts in unassembled condition, as well as a very pleasant office fitted up on this space. The company cordially invite the trade to avail themselves of the facilities of the office and exhibit space while visiting the fair.

The Locke Insulator Mfg. Company, Victor, N. Y., have placed a contract with Prof. H. B. Smith of the Worcester Polytechnic Institute, Worcester, Mass., for a 200-kw. 300,000-volt transformer, which will be the largest very high potential transformer ever built, though its voltage will be less than that which has been used at the Polytechnic for experimental purposes.

The Luitwieler Deep Well Pumping Equipments.

It was the original intention of the Luitwieler Pumping Engine Company, Los Angeles, Cal., to exhibit in operation at St. Louis a small municipal pumping plant having a capacity of 1,000,000 gallons per day. Unfortunately, however, a strike of their molders prevented the finishing of the work after the greater part was already done.

The exhibit as it now stands includes the 4 horse-power railroad pumping engine, shown in Fig. 1, and the 15-inch pumping head for belt drive, shown in Fig. 2. The engine is supplied with gas or gasoline, and operates a pump of the deep well cylinder type, which may be placed at any depth below the surface. The shaft of the engine carries the usual fly wheel at one end, and at the other a pinion which may be released from or attached to the shaft by a clutch, as shown. This pinion meshes with a large gear and drives the part known as the working head. On the shaft with the large gear are two chilled iron cams which actuate cross heads attached by rods to two plungers in the well. Rollers at the top and bottom of the cross heads engage the cams, the upper ones taking the water load and the lower ones providing the positive return stroke. The cams are set 180 degrees apart, and are so designed that the up stroke occurs during 55 per cent. of each revolution and the down stroke in the remaining 45 degrees. This insures a continuous water delivery, as each piston starts to move upward before the other has ceased to lift. The cross heads are provided with vertical bearing surfaces or shoes on each side. The outer ones are guided in the outside housings, and the inner ones work in planed guideways in the center column midway between the housings, the whole giving a very rigid construction.

There are two methods of connecting the cross heads with the pumps. One employs a hollow rod or pipe through which a solid rod passes. The solid rod is attached to one of the cross heads near its upper inner side, and the hollow rod to the other cross head near its lower

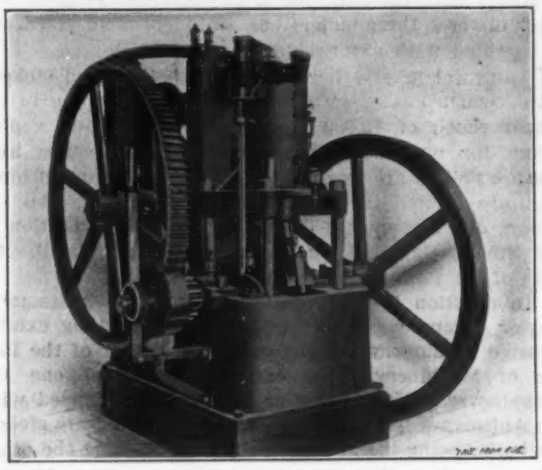


Fig. 1.—Four Horse-Power Railroad Pumping Engine.

end. These rods move vertically along the center line of the well. The hollow rod is attached to the upper piston in the pump barrel, and the solid rod to the lower piston. The pump chamber may be several hundred feet below the surface, or, if desired, it may be placed just below the working head. As an alternative a double chamber pump may be used, when the cross heads would move an outside packed plunger in each pump chamber after the manner shown in Fig. 2. This 15-inch belt pump head has the same driving mechanism already described.

The double pump chambers situated below the head can be provided with valves for any service, paper stuff, mine or pressure work. In mine work the working head is placed at the top of the shaft and the pump chambers any distance below, each pump plunger being controlled and operated by a rod. The weight of the rods and plungers is of little consequence, as they counterbalance one another the greater part of the time, and so take little power to operate. The driving mechanisms are so well balanced that it is said that they may be operated without bolting down to a foundation, the water load being constant.

The railroad pumping engine has a 12-inch stroke and a 6-inch deep well cylinder. Its maximum is 100 single strokes per minute, and its efficiency is claimed to be 80 per cent. At the fair the engine will be operated by gas. The pump head has a 15-inch stroke and works two 6-inch outside packed plunger pumps on which all valves are

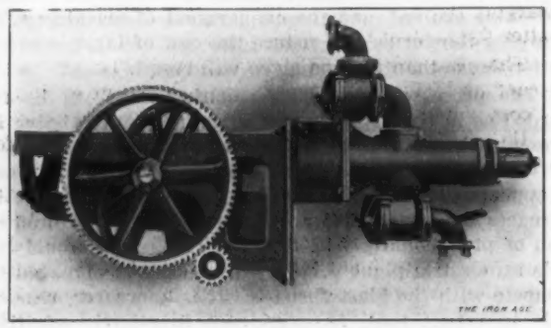


Fig. 2.—Fifteen-Inch Pumping Head.

provided for paper stuff. It is driven by a 7 horse-power Foos gas engine at about 50 double strokes per minute and gives a constant water delivery.

Cleveland-Cliffs Village Improvement.

The Cleveland-Cliffs Iron Company, Ishpeming, Mich., have favored us with copies of the printed matter on village improvement which they are this season distributing among their tenants occupying lands in the Hard Ore, Marquette, Nebraska, Barnum, Junction, North, Salisbury, Bancroft, First and Second additions to the city of Ishpeming. The company, in pursuance of a custom followed for some years, offer prizes aggregating $200 for the season of 1904 for best kept premises, vine planting, window box gardening and vegetable gardens. An illustrated pamphlet gives the conditions under which the prizes are awarded and presents photographic views of houses and gardens which won prizes for their occupants last season. The company maintain nurseries for supplying plants and employ landscape artists to assist in planning gardens and laying out lawns. In 1903 twice as many tried for honors as compared with any former period. The committee on prizes reported far more accomplished that year in the improvement of homes than in any previous season in the history of Ishpeming. Many who did not enter the competition were as active in home adornment as those who were trying for prizes.

Mesta Machine Company.—The Mesta Machine Company, Pittsburgh, have recently purchased the entire property of the Walker Bridge Works, adjoining their plant at West Homestead, Pa., from the American Bridge Company. The land comprises about 10 acres, on which are erected a number of buildings. The Mesta Machine Company expect to extend their plant and are making surveys and preparing plans, but have not decided definitely when they will commence the construction of the new buildings. The capital stock of the company was increased about a year ago to $1,250,000. Their product consists of Corliss engines, reversing engines, vertical and horizontal blowing engines, rolling mill, steel works, tin plate and sheet mill machinery, steel, sand and chilled rolls and machine molded gears. Over half of their business during the last three or four years has been the building of large engines for blast furnaces and rolling mills. They recently received a large contract for engines, sugar grinders and other machinery, to be installed in the refinery of the Colonial Sugar Company of Cuba, work on which has already been started. Their general offices are in the Lewis Block, Pittsburgh. George Mesta is presi-

dent; Charles J. Mesta, vice-president; J. O. Horning, secretary; William H. Rea, treasurer, and W. D. Rowan, auditor.

Changes in the Canadian Tariff.

The General Dumping Clause.

TORONTO, June 10, 1904.—The catchy feature of Mr. Fielding's budget in 1897 was the preference in favor of Great Britain; in 1903 it was the extension of the iron and steel bounties, and this year it is the device to check "dumping." This grievance of the manufacturers he has provided for, not by a sweeping revision of the tariff, increasing the duties in detail, but by adding a master clause to the customs law. This, which is known as the "dumping clause," is as follows:

That whenever it shall appear to the satisfaction of the Minister of Customs, or of any officer of customs authorized to collect customs duties, that the export price or the actual selling price to the importer in Canada of any imported dutiable article, of a class or kind made or produced in Canada, is less than the fair market value thereof, as determined according to the basis of value for duty provided in the Customs Act in respect of imported goods, subject to an ad valorem duty, such article shall, in addition to the duty otherwise established, be subject to a special duty of customs equal to the difference between such fair market value and said selling price: Provided, however, that the special customs duty of any article shall not exceed one-half of the customs duty otherwise established in respect to the article, except in regard to the articles mentioned in items 224, 226, 228 and 231 of Schedule A, the special duty of customs on which shall not exceed 15 per cent. ad valorem.

The articles referred to in items 224, 226, 228 and 231 in Schedule A are:

Item 224.—Iron in pigs, iron kentledge and cast scrap iron, $2.50 per ton.

Item 226.—Iron or steel ingots, cogged ingots, blooms, slabs, billets, puddled bars and loops or other forms not otherwise provided for, less finished than iron or steel bars, but more advanced than pig iron, except castings, $2 per ton.

Item 228.—Rolled iron or steel angles, tees, beams, channels, joists, girders, zees, stars and other rolled shapes or trough, bridge, building or structural rolled sections or shapes, not punched, drilled or further manufactured than rolled, n.e.s., and flat eyebar blanks not punched or drilled, 10 per cent. ad valorem.

Item 231.—Rolled iron or steel plates not less than 30 inches in width and not less than ¼ inch in thickness, n.o.p., 10 per cent. ad valorem.

Briefly, the principle adopted in the dumping clause is that the full market price in the country of production shall be paid, and that if something less than that is paid there the abatement shall be handed over by the importer as extra customs duty. But there are restrictions on the application of this principle. First, non-dutiable goods are not subject to the clause. Second, the extra duty for dumping is not to exceed half the regular duty, whatever its gradations may be short of that. Third, on pig iron, steel ingots, blooms, slabs, billets, puddled bars, heavy structural shapes and large steel plates it is not to exceed 15 per cent. ad valorem. Also, the clause makes an exception of one item on the free list, wire rods, and enacts as follows:

The foregoing provisions respecting a special duty of customs shall apply to imported round rolled wire rods not over ⅜ inch in diameter, notwithstanding that such rods are on the customs free list. Provided, however, that the special duty of customs on such wire rods shall not exceed 15 per cent. ad valorem.

Changes in the British Preference.

Besides the comprehensive dumping clause there are changes in the duties on particular articles. A significant one, as marking a reversal of the policy inaugurated with the preferential tariff in 1897, is the raising of the net duties on woolens coming from the United Kingdom. In the regular tariff woolens were, and still are, subject to a duty of 35 per cent. ad valorem. One-third off left the net rate to British exporters 23 1-3 per cent. This net rate has been raised to 30 per cent., so that now the British preference on woolens is just 5 per cent. ad valorem, which is a discount of 1-7 of the regular duty, as against the former one of 1-3.

Tableware of china or porcelain coming from Great Britain is now subject to a duty of 15 per cent. ad valorem, as against a former two-thirds of the regular duty, which regular duty remains at 30 per cent. In this case the preference is increased from one-third to one-half of the regular duty.

Common and colorless window glass coming from Great Britain is to be admitted at 7½ per cent. ad valorem, instead of at two-thirds of the regular rate, which regular rate is left unchanged at 20 per cent. ad valorem. Thus the British now pay but three-eighths of the regular duty.

Twine and cordage coming from Great Britain are increased to 20 per cent. ad valorem, as against two-thirds of the regular duty, which regular duty remains at 25 per cent. ad valorem.

Changes in the Regular Duties.

Buggies, carriages, &c., remain at 35 per cent. ad valorem, but this modification is added that the lowest valuation for duty shall be $40 in the case of open buggies, and $50 in the case of covered buggies.

Plate glass, not beveled, in sheets or panes not exceeding 7 square feet each, is dutiable now at 10 per cent. The former rate was 25 per cent. ad valorem.

Plate glass sheets, not beveled, exceeding 7 square feet each and not more than 27 square feet, remain at 25 per cent.

Among the articles added to the free list are the following:

Printing presses of a class not made in Canada. Formerly dutiable at 10 per cent. ad valorem.

Linen manufacturing machinery of a class not made in Canada. Formerly dutiable at 25 per cent.

Machinery, such as is not made in Canada, for the manufacture of brass goods. Formerly dutiable at 25 per cent.

Well drilling machinery and apparatus (not including motive power) of a kind not made in Canada. Formerly dutiable at 25 per cent.

Crude petroleum. Formerly dutiable at 5 cents per gallon.

The provision of the tariff admitting free of duty machinery and appliances (not being made in Canada) for alluvial gold mining is extended to July 1, 1906.

Oil Duties.

Besides removing the duty of 5 cents per gallon on crude petroleum the Finance Minister has reduced refined petroleum from 5 to 2½ cents per gallon. On all the products of petroleum the duties are reduced as follows:

Paraffine wax candles are now admitted at 25 per cent. Formerly 30 per cent.

Paraffine wax, 25 per cent. Formerly 30 per cent.

Illuminating oils costing more than 30 cents a gallon, 20 per cent. Formerly 25 per cent.

Lubricating oils, in whole or in part of petroleum, costing less than 25 cents per gallon, 2½ cents per gallon. Formerly 5 cents.

Crude petroleum above 40 Reaumé gravity, 1½ cents per gallon. Formerly 2½ cents.

Lubricating oil, n.e.s., 20 per cent. Formerly 25 per cent.

Vaseline and similar petroleum preparations for toilet, medical and like purposes, 25 per cent. Formerly 35 per cent.

A bounty of 1½ cents per gallon is provided to encourage the production of crude oil in Canada, that industry being put at a disadvantage by the abolition of the duty on crude and the halving of the duty on refined.

Is the Anti-Dumping Device Workable?

It will not be an easy matter to carry out the provision against dumping. In the first place, market prices are not so stable as they were when there was less unsettling competition. It will be difficult for any customs collector to dogmatize as to the market price of a class of article of which there are multifarious grades and forms on the market. Even if there were always an easily referable criterion of market prices to guide the customs official, how is he to knew when goods have been purchased at bargain rates? The importers will not be too ready to take him into their confidence. Buyer and seller may agree upon methods of entry and of bookkeeping that will evade the dumping duty. One reform the new clause probably will effect, and that is put an end to undervaluing for duty. To escape the penalty duty for dumping the importer will be likely to represent the price at which he purchased to be at least that at which such goods change hands in the domestic trade of the country of production. He will naturally prefer to pay the full regular duty alone rather than the full regular duty plus the dumping duty. By entering the goods at the current market value he will deprive the Government of *prima facie* evidence that they were purchased for less. There is no class of cases in which it is more difficult to advance from suspicion to positive proof than the cases which would arise under the Anti-Dumping law.

C. A. C. J.

The Detrick & Harvey 72-inch Boring, Drilling and Milling Machine.

A new horizontal boring, drilling and milling machine, possessing a number of advanced and interesting features, has just been placed upon the market by the Detrick & Harvey Machine Company, Baltimore, Md.

The machine consists of a horizontally revolving spindle, having a horizontal traverse parallel to the bed plate and at right angles to the runway for column. This spindle is mounted in a saddle having a vertical movement of 72 inches on the face of the column. The column has a horizontal movement of 72 inches (or more if desired) on the runway. Fast and slow power movements to the saddle and column, and power feeds and quick return for the spindle in either direction, are provided. Hand feeds are provided for all motions.

The runway is a box shaped casting, heavily ribbed and flanged. The top surface consists of a front and rear slideway, 14 and 8½ inches wide, respectively. The width of slideway over all is 56 inches, and depth under the same is 18 inches. The column is a tapering box shaped casting, with a base 71 inches wide by 81 inches long. At the rear and side are located the driving gearing and motor for rotating the spindle and for feeding column and saddle.

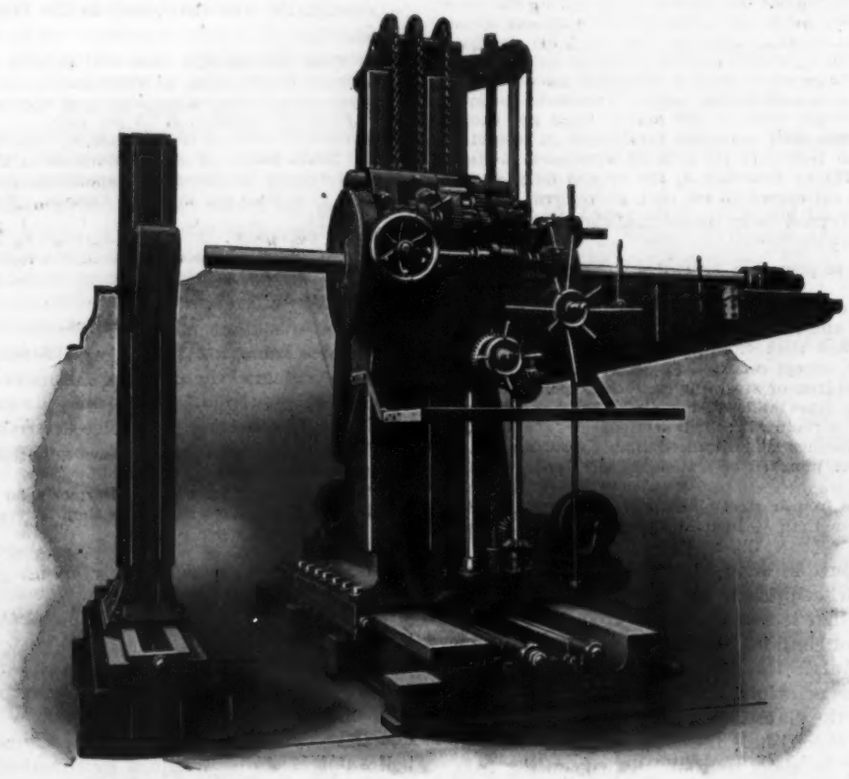
The spindle saddle is a box shaped casting, with a bearing on the vertical face of the column 56 inches long. On the saddle are cast the bearing for the spindle rotating sleeve, 37 inches long, and the bearings for the driving shafts and gears. The saddle is counterbalanced. The spindle is of hammered steel, 5½, 6 or 6½ inches in diameter, with a No. 6 Morse taper hole in the end. The spindle is ground to a sliding fit in a sleeve 46 inches long. The sleeve is slightly tapered on its outside, and revolves in a bronze bushed bearing 37 inches long in the saddle. Bronze and steel thrust washers, front and rear, and take-up collars, are provided for wear. When motor driven the rotating mechanism for the spindle consists of a 7½ horse-power reversible motor of the constant speed type, direct connected to the driving gearing and mounted on the base of column.

The work bed, or bed plate, is a flat box shaped casting 12 inches deep, with T-slots on its top surface, cross ribbed, heavily flanged and reinforced under T-slots. It is tongued and bolted to runway. The dimensions of the bed plate are made to conform to the requirements of the purchaser.

The outer support for the boring bar consists of an upright post, carrying on its vertical face a vertically adjustable bearing for the end of the boring bar. This bearing is fitted with a stationary bushing, suitable for the bar, with a vertical bearing of 24 inches on the face of the post. The post slides horizontally, parallel to the main column, on a supplementary bed resting on the bed plate. The adjustments in the outer support are made by hand by means of screws.

The boring and drilling feeds are eight in number. All are reversible and they are installed on the saddle. The boring and drilling feeds range from 0.007 to 0.4 per revolution of spindle.

The milling feeds to the saddle and column are also eight in number, and are reversible and installed on the saddle. The milling feeds for the saddle and column range from 0.01 to 0.5 per revolution of spindle. The speeds to spindle are 20 in number, ten through the sleeve gear and ten through the face plate gear. The changes of speed are made by means of a cone of gears and by lever operating clutches. Four changes of speed are obtained by shifting of the levers and without changing step of cone.



THE DETRICK & HARVEY HORIZONTAL BORING, DRILLING AND MILLING MACHINE.

All power and hand movements, fast and slow, for the spindle, saddle and column, are controlled by the operator from his platform attached to the saddle. The levers for this purpose are conveniently located within easy reach of the operator. The rapid movement of the saddle and column is obtained by an independent reversible motor of 7½ horse-power, mounted on a supplemental base at the rear end of the runway. The saddle has 72-inch vertical movement. The spindle has 72-inch stroke or continuous adjustment. The column has 72-inch (or more if desired) horizontal traverse. From the center of the spindle to the bed plate in its lowest position is 48 inches, and in its highest position 120 inches.

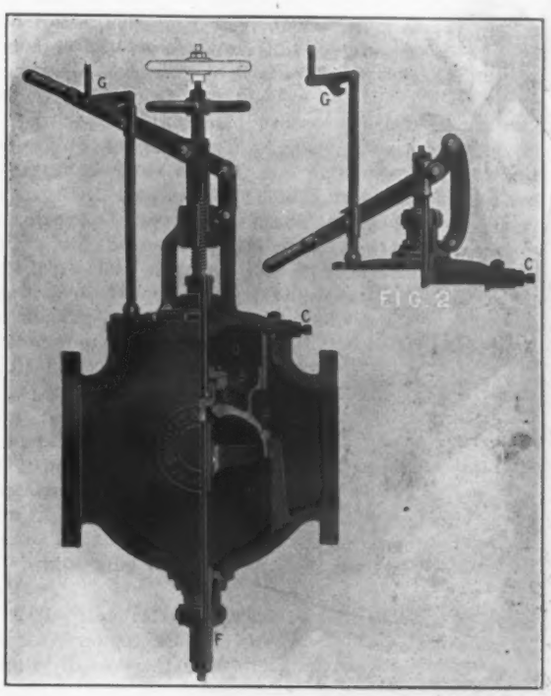
The members of the Merchants' and Manufacturers' Association, recently organized at Pittsburgh, will soon visit about 30 of the larger towns in West Virginia. J. W. Wardrop has completed an itinerary of 800 miles. The trip will be taken to further the interests of the members of the association and to allow them to become better acquainted with the trade in West Virginia.

A New Balanced Automatic Trip Valve.

In designing the equipment of electrical or other power plants where high pressure steam is to be carried the desire to safeguard against accident has given rise to a demand for a high class quick closing steam valve. One which is positive and automatic in its action and which can be placed either in the main steam pipe and closed quickly by hand or electrical appliance in case of break, or can be applied on a separate steam pipe to the engine, and so connected to the governor that in case of racing of the engine the valve trips and closes automatically, has just been placed upon the market by the Schütte & Koerting Company of Philadelphia, Pa.

The hard bronze mountings are of a special mixture of copper and tin only, and where necessary the bodies are made of cast iron gun metal, to withstand a temperature of 650 degrees superheat and 250 pounds working pressure.

The principal features of internal construction, as shown in the accompanying engraving, embody the balanced piston disk B moving in cylinder D attached to cover, and the auxiliary relief or by-pass valve E attached to stem, also the through plunger F on bottom of spindle. In operation the steam enters the valve body above the seat A, hence when valve is shut the pressure tends to keep it closed. The piston B moving in the stationary cylinder D is not tight fitting. When the valve is shut the pressure in the cylinder will be the same as at the inlet. The small auxiliary valve E on the spindle opens in advance of the main valve, and in do doing allows the steam contained in the cylinder to discharge below the valve disk, thus equalizing pressures above and below; at the same time it acts as a by-pass for warming up. No great effort is, therefore, required to lift the main valve. The several proportions are such that a slight overpressure is maintained above the piston, to give the valve at all times a closing tendency. This overpressure should be but slight, and to regulate it at will there is (besides the leak around the piston) a separate steam admission into the cylinder, regulated by the screw plug C. This screw plug is adjusted properly when the valve is originally placed in operation and is then locked.



THE SCHUTTE & KOERTING BALANCED AUTOMATIC TRIP VALVE.

On the exterior, the valve is provided with a trip latch, G, attached to a rod, which supports lever and valve when open. The spindle extends entirely through the body of the valve, and when latch G is released the steam pressure, acting upon the plunger F, closes the valve quickly and automatically, but without jar. When placed as a quick closing valve in main steam pipe it is conveniently operated from a distance by a rod connected directly to the latch, or it may be attached to an electrical knock out appliance and push buttons placed at convenient locations. It may also be operated by means of a small piston connected with water, air or steam pressure.

In electrical power houses, where an instantaneous stopping of the engine is often demanded, it is considered a necessary part of the outfit. When placed in steam pipe to the engine, attachment is made with the governor to the latch, and in case of the engine racing the governor will trip the latch and close the valve. The tripping mechanism of the regular trip valve is shown in Fig. 2, which is in the upper right hand corner of the engraving. The main sectional view of this engraving shows the mechanism of a combined lever trip and screw spindle throttle valve, and, as the name implies, it may be used as a trip valve on engine and a throttle combined, thus obviating the use of separate valves. This valve contains all the features of the plain trip valve, with the addition of a screw spindle and hand wheel for throttling. The trunnion carrying screw is attached to and moves with lever, and is guided by square through yoke, thus allowing the valve to close automatically when tripped, while the throttling is accomplished by adjusting the screw spindle. When the lever is latched up and the valve throttled or partly opened by means of screw, then, if latch is tripped, the stroke of lever will be proportional to the distance valve is opened, and should it be desired to start up immediately, the valve is opened by means of the lever until latched, bringing the throttle in original position again.

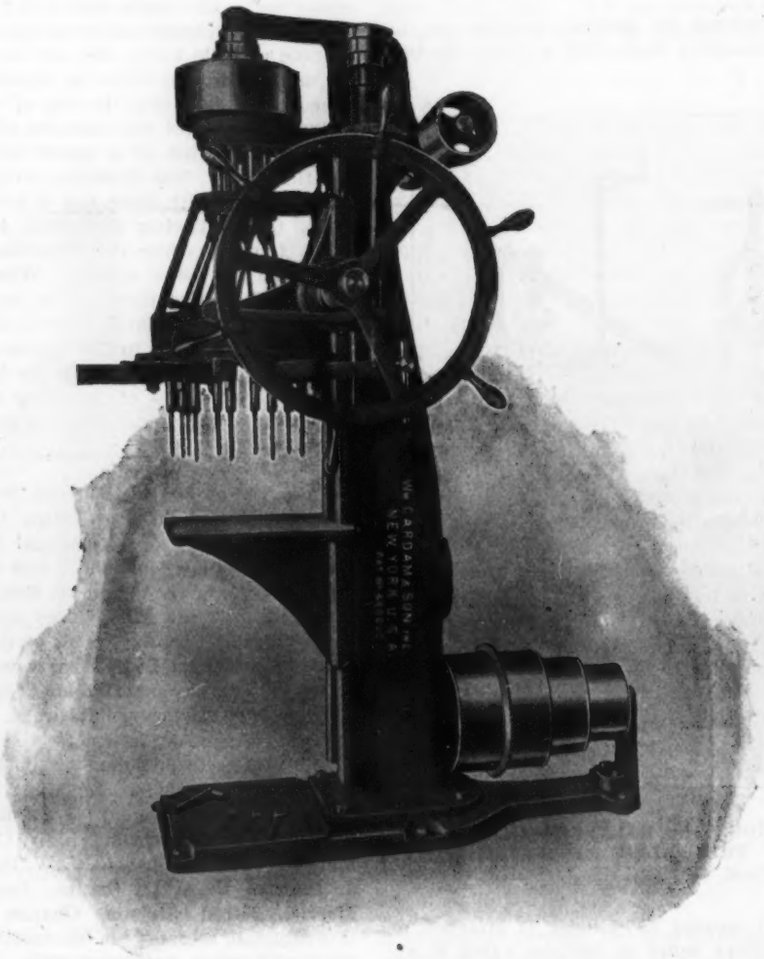
A party of 30 English and Scotch mechanical engineers, who had been attending the convention of the American Society of Mechanical Engineers at Chicago, visited Milwaukee on June 4 and spent several hours in an inspection of the mammoth shop of the Allis-Chalmers Company at West Allis. They also made a short visit to the West Milwaukee shops of the Chicago, Milwaukee & St. Paul Railroad. The party was under the guidance of Robert Quayle, superintendent of motive power of the Chicago & Northwestern Railroad, and included the following foreign delegates to the Chicago convention: J. H. Wicksteed, president of the Institution of Mechanical Engineers, London, England; J. W. Spencer, Daniel Adamson, James Brigham, John Barr, J. S. Botts, E. J. Chambers, John Cochrane, L. W. Crosta, William Daniel and son, James Bronsfield, J. W. Darling, Hugh Dunn, A. J. Impson, Edgar J. Justins, John MacDonald, W. E. Morris, Alfred Stetson, Charles Wicksteed, Edward Worthington, secretary of the institution. Accompanying the party were Arthur Warren, manager of publicity and promotion of the Allis-Chalmers Company, and James W. Lyon, W. P. Starkweather and W. P. Kane, representatives of the Society of Mechanical Engineers.

The Mexican Permanent Exposition Company, Mexico City, Mexico, have been organized by a number of citizens of Mexico, who have secured a most favorable Government concession and are now erecting extensive exposition buildings, which will be ready for occupancy on or about October 21. It is the intention of the company to maintain a permanent exhibit in the Mexican capital of such products of other countries as are best adapted to Mexican uses. J. Landero Y Cos is president and E. Hegewisch is secretary. The company have appointed E. H. Talbot of New York commissioner for the United States, with full power to assign space and arrange all details relating to exhibits. Mr. Talbot is honorary member of the Mexican Commission to the St. Louis World's Fair and will be located in the Mexican section, Manufactures Building, St. Louis, Mo., until November 30, where he may be called upon or addressed regarding space or any other matters connected with the Mexican Permanent Exposition.

The Gardam Adjustable Multiple Spindle Drill.

In the accompanying illustration a new type of adjustable multiple spindle drill is shown which is the product of Wm. Gardam & Sons, Incorporated, New York. The machine is adjustable to drill holes not only within the limit of a given circle, but when arranged either in parallel lines, in a square or octagon or any irregular figure, at one setting.

The machine is adjustable to drill at one time in any relative position as many as 10 holes, each ⅜ inch diameter, anywhere within a maximum drill circle of 13 inches, or within a minimum drill circle of 3½ inches. When, however, only four or a lesser number of drills are used it is possible to confine the work within a circle of still smaller diameter. The machine is equipped with both power and hand rack or pinion feeds and possesses an adjustable automatic stop. It is belt driven, with three changes of drill speed, and to each change of the drill speed there are three changes of power feed. The head is counterbalanced and has 5½ inches of travel. The hight over all is 82 inches, and the maximum distance from the end of the spindles to the top of the table is 28½ inches. The table is 16 inches square and has a rise and fall of 20¼ inches. Each spindle has 1 inch of vertical adjustment to allow for different lengths of drills. The design of this machine is such as to insure direct application of power to the spindles and feed. The adjustable arms will reach the center of the head, and the rack and pinion feeds and automatic stop are all operated from the front of the machine, allowing the operator to manipulate it with the greatest rapidity.



THE GARDAM ADJUSTABLE MULTIPLE SPINDLE DRILL.

At the annual meeting of the stockholders of the Illinois Steel Company, held at Chicago on June 8, the old directors were re-elected, and they in turn re-elected the old officers, as follows: President, E. J. Buffington; first vice-president, T. W. Robinson; second vice-president, C. H. McCullough, Jr.; secretary and treasurer, T. J. Hyman. The Executive Committee is composed of E. H. Gary, C. M. Schwab, T. W. Robinson, E. J. Bufflington and T. J. Hyman. The Executive Committee and E. C. Converse, K. K. Knapp, W. Duff Haynie, George Campbell, L. D. Doty and C. H. McCullough, Jr., make the Board of Directors.

The Duty on Sheet Steel in Strips.

WASHINGTON, D. C., June 14, 1904.—The Treasury Department is about to promulgate a decision just handed down by the United States Circuit Court for the southern district of New York with regard to the proper dutiable classification of certain sheet steel in strips manufactured by the cold rolling of rods previously subjected to a pickling process. The importation in question was made by the Crucible Steel Company, and after having been properly classified as sheet steel, was assessed with additional duty on the ground that the finish was superior to that ordinarily imparted by cold rolling and smoothing. The importers protested, asserting that the high finish of the steel was due to the pickling which removed the scale leaving the metal white, but which was an essential feature of the process of cold rolling. The Board of General Appraisers sustained the collector's classification and assessment, but the Circuit Court has now reversed the board, rendering the following decision in favor of the importers:

"The merchandise in question consists of what is known as sheet steel in strips, and was assessed for duty under the provisions of paragraph 135 of the Tariff act of 1897, which provides for 'sheets and plates and steel in all forms and shapes not specially provided for.' It is admitted that this classification was correct. An additional

duty was also assessed upon said merchandise under the provisions of paragraph 141 of said act, which provides for 'steel . . . cold rolled, . . . brightened, . . . or polished by any process to such perfected surface or polish better than the grade of cold rolled, smoothed only, hereinbefore provided for.' The previous provisions with reference to steel cold rolled and smoothed only referred to in paragraph 141 are contained in paragraph 133, the pertinent portion of which is as follows:

Provided, that plates or sheets of iron or steel, by whatever name designated, other than the polished, planished or glanced herein provided for, which have been pickled or cleaned by acid, or by any other material or process, or which are cold rolled, smoothed only, not polished, shall pay 2-10 cent. per pound more duty than the corresponding gauges of common or black sheet iron or steel.

"It is unnecessary to discuss the elaborate contentions of counsel for the importers as to the various ways in which the uncertain provisions of these paragraphs may be so reconciled and construed as to support his contention.

"Two questions are presented—namely, whether the merchandise has been brightened to a surface better than cold rolled, smoothed only, and whether it has been subjected to any process for this purpose, as distinct from the process necessary to produce the articles in question—namely, cold rolled strip steel.

"It appears that said process consists in rolling the rods down hot to a certain guage, then annealing them, cleaning them with acid, and subsequently cold rolling them. The cleaning with acid, termed 'pickling,' serves to remove the scale and make the surface of the steel white, and the result of the subsequent cold rolling is to give it a bright surface. The great preponderance of evidence is to the effect that this particular kind of cold rolled strip steel cannot be produced without the intervening step of pickling, and that it would not be commercially known as cold rolled, smoothed only, except where thus produced. In these circumstances it cannot fairly be said that this merchandise has been 'brightened by any process to such perfected surface finish or polish better than the grade of cold rolled, smoothed only,' because the operation of cleaning or pickling is essential to the creation of the commercial product which is the subject of duty. It is not the pickling which brightens the steel; the brightening results from cold rolling on a plain steel surface.

"The illustrative exhibits A, B and C, introduced by the Government, seem to be only remotely relevant to this inquiry, because they belong to a different class of merchandise. The testimony of two of the witnesses for the Government, that the merchandise in question has been subjected to a process to give it a brighter finish, is of very little weight. It appears from their statements that they have only a very superficial acquaintance with this kind of product.

"If this class of steel in strips when first cold rolled after the said necessary preliminary processes, is to be held to be so brightened as to be better than that provided for in paragraph 133, than it would appear that there could be no such thing as sheet steel in strips cold rolled, smoothed only; if such steel strips are not to be held to be thus brightened by the said first cold rolling, then it is impossible to say at what period during the numerous passes through the rolls they cease to be smoothed only and become brightened. In no case have they been brightened or polished by any process subsequent to their being cold rolled.

"The conclusion reached is that this merchandise has not been brightened within the meaning of paragraph 141. This conclusion is supported by the decisions in Boker *vs.* United States (124 Fed. Rep., 59), United States *vs.* Wetherell (65 id., 987), by the uniform practice of the Treasury Department for 15 years not to assess the additional duty of 1 cent per pound, herein protested against, on this class of cold rolled strip steel, and by the further fact that the finished product is to be used for car-seal springs, and its value is not increased by the brightening which results from the processes necessary to its production. The decision of the Board of General Appraisers is reversed."

The district attorney has recommended that an appeal be taken in this case, and orders to that effect will probably be issued by the Attorney-General in a few days.

W. L. C.

April Iron and Steel Imports and Exports.

The exports of iron, steel and manufactures thereof maintained in April the large volume reached in March. The report of the Bureau of Statistics of the Department of Commerce and Labor places the total value of such April exports, excluding ore, at $10,574,612, against $10,633,720 for March, which was a 31-day month. Taking the commodities for which quantities are given, the showing made by April was not so favorable, the total having been 75,747 gross tons, against 89,332 tons in March. All items decreased, except iron and steel bars, sheets and plates, tin plates, structural shapes and cut nails. The faaling off was particularly heavy in billets and rails. Following are the detailed figures for such articles for the month and four months ending April 30, compared with the corresponding periods of last year:

Exports of Iron and Steel.

	April.		Four months.	
	1904.	1903.	1904.	1903.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	2,898	1,143	17,023	4,982
Scrap	1,444	271	6,726	1,313
Bar iron	3,391	3,560	10,136	7,504
Wire rods	370	5,612	4,225	10,236
Steel bars	4,145	885	6,977	7,591
Billets, ingots, blooms	28,276	54	108,573	565
Hoop, band, scroll	309	356	1,414	881
Iron rails	208	7	1,409	26
Steel rails	10,460	1,575	41,758	2,967
Iron sheets and plates	517	354	963	713
Steel sheets and plates	3,257	1,670	8,212	4,386
Tin plates and terne plates	1,262	4	1,963	153
Structural iron and steel	3,854	2,234	10,987	9,986
Wire	11,549	11,104	38,502	35,268
Cut nails	798	683	2,962	2,530
Wire nails	2,765	2,876	9,830	8,598
All other, including tacks	244	205	857	663
Totals	75,747	32,593	272,517	98,362

The total value of iron and steel imports in April, excluding ore, was $1,733,176, against $1,894,306 in March, showing a continuance of the diminishing movement toward this country. Steel rails, hoops and wire rods showed increases, but they were not significant. The total imports for April of articles for which quantities are given were 23,975 gross tons, against 28,795 tons in March. The detailed figures for such articles for the month and four months ending April 30 are as follows, compared with the corresponding periods of last year:

Imports of Iron and Steel.

	April.		Four months.	
	1904.	1903.	1904.	1903.
Commodities.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	7,713	99,944	34,766	315,438
Scrap	1,291	9,298	4,932	33,678
Bar iron	1,289	2,336	5,998	16,254
Rails	3,903	11,378	14,722	54,467
Hoop, band and scroll	204	114	938	499
Billets, slabs, bars, &c., steel in forms n. e. s.	879	29,014	5,399	119,339
Sheets and plates	362	411	2,754	2,710
Tin plates and terne plates	5,917	6,362	21,232	19,164
Wire rods	1,519	1,877	5,323	6,767
Wire and articles made from	310	496	1,597	1,436
Structural iron and steel*	532	....	4,355	....
Chains	33	49	133	157
Anvils	23	....	51	30
Totals	23,975	161,279	102,200	569,938

* Included in "All other" prior to July 1, 1903.

The value of all iron and steel exports, excluding ore, for the ten months ending April 30, was $89,094,415, against $79,839,462 in the corresponding period of last year. Imports of the same character for the same periods totaled, respectively, $23,075,084 and $43,332,714.

Two New Flather Shaper Attachments.

The Mark Flather Planer Company of Nashua, N. H., have brought out two new attachments for their shaper, as shown in the accompanying illustrations. One is a new circular attachment, designed to plane in a circle of 2½ inches radius and 14 inches long, which is the entire length of the stroke. The other is an improved design of cone mandrel attachment.

The circular attachment was designed to meet special Government requirements, the specifications of which called for a 14-inch crank shaper to plane a circle with 2½ inches radius 14 inches long. It has always been an easy matter to secure a circular feed for a short distance, but to plane the full stroke of the shaper with the head in any angular position presented an entirely new proposition. To secure the result an independent head was furnished to replace the regular head. This independent head has a round boss fitted into the face of the ram and is clamped by screws into nuts held in a T slot, also in the face of the ram.

The center of the circular feed is carried to a point below the ways of the ram, so that the head may be turned completely round without conflicting with the column when at the rear extremity of the stroke. The feed is obtained by the attachment of a supplementary feed rod from the regular down feed connection. The worm and worm gear are operated in either direction by means of the feed pawl. This fixture is fitted with clapper block and box in the usual manner, and the block has an automatic spring release, so that the tool is snapped into place as soon as it has passed over the work, whether it is at an angle or in a vertical position. The strain of the work is taken by the patented brace under the box table, which is always under the tool. The ram is located by the hand wheel on top, which permits of the location of the ram being changed while the shaper is running. The stroke may also be changed while the machine is running by means of scroll and racks connected with the adjusting shaft passing through the sliding plate and clamped by the hand wheel shown on the side of the shaper.

The cone mandrel attachment is of very simple design, and is so arranged that it can be attached to the regular shaper saddle in five minutes' time, obviating the necessity of detaching the saddle from the nut. Incidentally the using of the saddle itself as a base for attaching the cone mandrel makes the whole attachment much stiffer and permits of adjustment by means of the screw. The outer end of the mandrel is supported in much the same manner as is the arbor of a milling machine, securing the greatest strength possible. The feed for the worm and worm gear is obtained by a ratchet driven by the regular feed rod, which is made long enough to be carried forward to drive the rocker piece supported by the casting bolted to the end of the cross rail when the attachment is being used. With this mandrel attachment arc surfaces are planed.

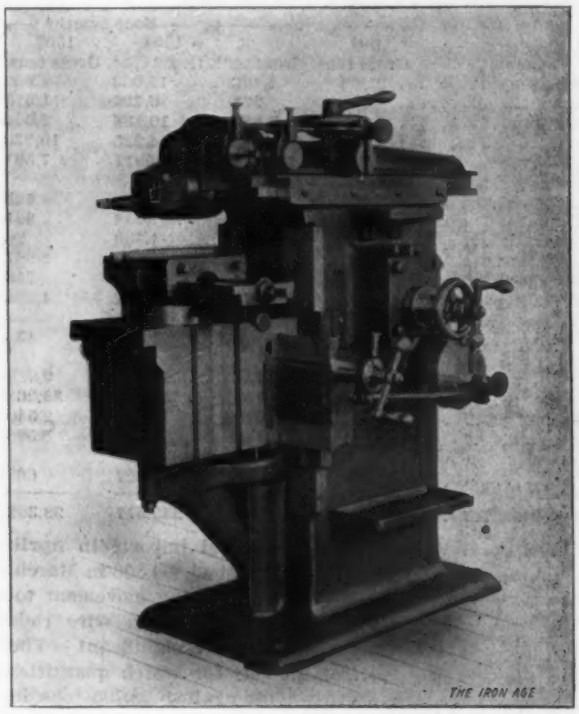


Fig. 1.—Shaper Equipped with Circular Attachment.

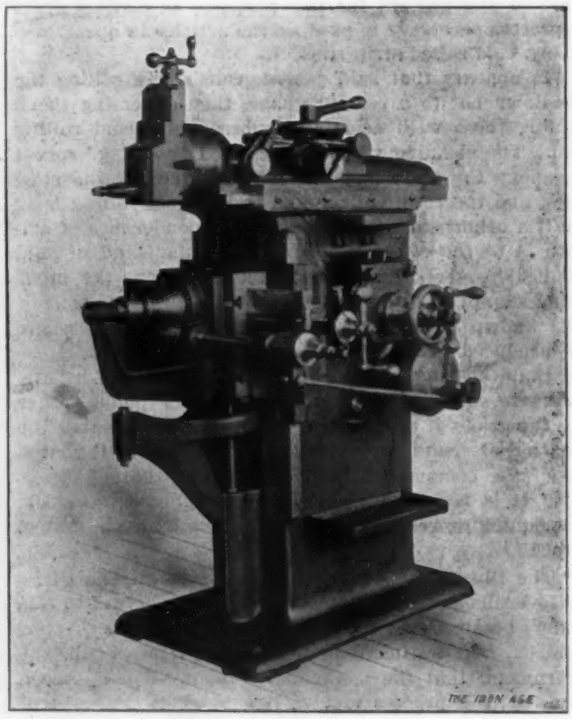


Fig. 2.—Shaper Equipped with the Cone Mandrel Attachment.

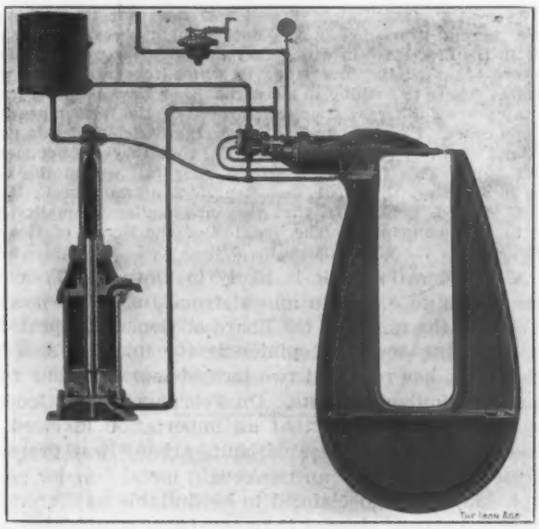
The Buckeye Forging & Specialty Company.—The Buckeye Forging & Specialty Company, Sebring, Ohio, have been organized with a capital of $60,000, fully paid up, and have taken over the business of the Sebring Forging Company. The incorporators are W. R. Renner, Louis Huechstetter, O. H. Sebring, Frank H. Sebring and E. Sebring. W. R. Renner is president, and Louis Huechstetter, formerly of Pittsburgh, is secretary and treasurer. They will turn out a general line of forgings, but will make a specialty of the manufacture of the Renner turnbuckle, of which their Mr. Renner is patentee. They have already received a large number of orders for these turnbuckles, sufficient to operate the plant full time for some months. The patents for the Renner turnbuckle are to cover the United States, Germany, France, Belgium and Canada.

Dean & Main, consulting engineers, of Boston, have made a series of tests of one of the Westinghouse-Parsons 400-kw. steam turbines at the works of the Westinghouse Machine Company, East Pittsburgh. With a rated brake horse-power of 580 and a rated speed of 3600 revolutions per minute, the following results were obtained with approximately 100 degrees F. superheat: With 31 per cent. overload, 758.9 horse-power, the weight of steam per brake horse-power was 12.07 pounds; with 2 per cent. overload, 12.41 pounds; with 77 per cent. load, 12.86 pounds, and with 41 per cent. load, 14.62 pounds. With approximately 180 degrees superheat and 32 per cent. overload, the weight of steam used per brake horse-power was 11.17 pounds, and with 2 per cent. overload, 11.45 pounds. With dry saturated steam the following results were obtained: With 26 per cent. overload, 13.63 pounds; with 2 per cent. overload, 13.91 pounds; with 77 per cent. load, 14.48 pounds, and with 42 per cent. load, 16.06 pounds.

The Fisher Hydraulic-Pneumatic Stationary Riveter.

A new style of hydraulic riveter operated by steam or compressed air through the medium of an intensifier is being built by the Fisher Foundry & Machine Company, Pittsburgh, Pa. The intensifier consists of two cylinders, one placed above the other. The lower or larger is connected with the source of power—the air tank or steam boiler; while the upper or smaller cylinder, filled with water, is connected with the riveter cylinder. The piston rod of the lower cylinder forms the plunger for the upper cylinder, so that when the pressure is admitted to the lower cylinder its piston rises, forcing the water from the upper cylinder into the riveter cylinder at a pressure which is increased above the pressure of the steam or air in the proportion of the areas of the intensifier, piston and plunger.

One stroke, not necessarily a full stroke, of the intensifier produces a complete cycle of operations of the riveter—to advance and secure the plate holder, in case one is used, or to advance the riveter die and form the



THE FISHER HYDRAULIC-PNEUMATIC STATIONARY RIVETER.

rivet head, and finally to return both riveter and plate holder dies to their original position.

The valve arrangement is such that these operations are controlled by one movement of each of two levers, in case the plate holder is used, and one movement of one lever in case the plate holder is omitted. The levers are returned to their original position automatically in either case.

A water tank placed at a suitable elevation is connected with both the upper intensifier cylinder and the riveter cylinder, in such a way that any waste from either cylinder is automatically supplied and the column of water from the tank to the intensifier cylinder, from the intensifier cylinder to the riveter cylinder and from the riveter cylinder back to the tank is maintained intact. Furthermore, the hydraulic head of the water in this tank is utilized in performing the idle movements of the different parts.

Between the air tank or steam boiler and the lower intensifier cylinder there is placed a regulating valve, by means of which the pressure under which the rivet is formed, and consequently the power consumed in forming the rivet, is controlled and adjusted approximately to the size of the rivet, resulting in a decided economy in power consumed.

In so far as the fluid in the riveter is used over and over again, oil or glycerine may be substituted for water, preventing freezing in cold weather and providing at the same time an efficient lubricant for all packing.

A. E. Masten & Co., stock brokers, 323 Fourth avenue, Pittsburgh, Pa., have issued a 20-page pamphlet on the method of investment and speculation in pig iron warrants. The purpose of the publication is to increase the interest in trading in pig iron warrants, as the warrants of the American Pig Iron Storage Company have now been listed on the Pittsburgh Stock Exchange. Full information is given relative to the manner in which transactions may be conducted, and a very interesting article on pig iron from the view point of the warrant market, by B. E. V. Luty, is incorporated. Some of the more important statistics of the pig iron trade are also presented.

The New England Foundrymen's Association.

The June meeting of the New England Foundrymen's Association was held at the Exchange Club, Boston, on June 8, with an attendance of 40 members. The number was less than usual because of the absence of members at Indianapolis and St. Louis, and because of the reunion of the Massachusetts Institute of Technology. One new member was admitted, the Taber Mfg. Company of Philadelphia. O. P. Briggs of Detroit, commissioner of the National Founders' Association, read a paper on "The Apprentice System in Foundries," which was listened to with great interest. The discussion of the paper was participated in by T. R. Scott of the Brown & Sharpe Mfg. Company, who told something of that company's apprentice system; L. N. Perrault of the B. F. Sturtevant Company, J. F. Lanigan of the Davis Foundry Company, Lawrence, Mass., and President B. M. Shaw of the Walker & Pratt Mfg. Company.

It was announced that the meetings of the association for July and August would take the form of outings, that in July probably at the Point Shirley Club, Boston Harbor, and that in August at Providence.

Large Water Power Development at Duluth.—The plans of the Great Northern Power Company, Duluth, Minn., have been financed and work on the water power development of the St. Louis River at Duluth will commence at once. This is the company proposing to equip the iron ore roads running between the Vermillion and Mesaba ranges to the head of the lake with electricity for the handling of all trains. The scheme has not been definitely settled as yet, but may be in the course of a reasonable time. The company will, however, furnish power for uses about the head of the lake, and will probably transmit power to many of the mines of the Mesaba. The initial development will be for 30,000 horse-power, and it is proposed to increase this, as required, to a total of considerably more than 100,000 horse-power, which is available at the rapids. These rapids have a fall of more than 500 feet. A drop of 365 feet will be had through the pipe line of the company from an open canal at the head of the cliffs to the river below. From a 70-foot dam further down the river the company will develop sufficient direct hydraulic power to permit the operation of one of the largest pulp and paper mills of the United States, negotiations for the erection of which have been in progress for some time.

The Lake Superior Corporation Organized.—Permanent organization of the Lake Superior Corporation, the successor of the Consolidated Lake Superior Company, was perfected at the company's offices, 100 Broadway, New York, on June 9, by the election of the following officers and directors: President, C. D. Warren, president of the Traders' Bank, Toronto; vice-president, Chas. E. Orvis of New York; secretary, Thomas J. Drummond of the firm of Drummond, McCall & Co., iron merchants of Montreal. Directors: J. Tatnall Lea, president First National Bank, Philadelphia; Charles S. Hinchman, Philadelphia; Francis B. Reeves, president Girard National Bank, Philadelphia; John T. Terry, vice-president Mercantile Trust Company, New York; Dumont Clarke, president American Exchange Bank, New York; George B. Turrell, president Mutual Trust Company, Orange, N. J.; N. W. Rowell, King's Counsel, Toronto, and F. H. Clergue, the original promoter, Montreal. John T. Terry, Jr., has been elected treasurer and Edward White assist-

ant treasurer. A check for $1,000,000 was received by the directors, which sum will be used as working capital, as provided by the reorganization plan. It was announced that most of the plants would be started up at once.

The Duty on Certain Ferro-Alloys.

WASHINGTON, D. C., June 14, 1904.—The interesting question as to the proper dutiable classification of steel hardening metals which was raised a year ago by certain American manufacturers of ferrochrome, who claimed that a great injustice was being done an important domestic industry by admitting these articles at the rate of $4 per ton "by similitude to ferromanganese," has been decided adversely to the contention of the manufacturers by the United States Circuit Court in an opinion just handed down by Judge Townsend. In view of the importance of the issue involved, and especially because of the steadily increasing importations of the alloys, notwithstanding their production in this country, it is anticipated that an appeal will be taken from this decision. A conference between the customs officials and representatives of the Attorney-General will be held at an early date to determine the course to be pursued.

Not Enumerated in Tariff Act.

At the time of the framing of the Tariff act these alloys were not sufficiently well known to be specifically enumerated, but ferromanganese was made dutiable at $4 per ton by the provisions of paragraph 122 of the metal schedule. The general similarity in the properties of the metals used for steel hardening was such, however, that appraising officers usually resorted to the similitude principle of tariff construction and assessed duty thereon at the same rate provided for ferromanganese. The domestic manufacturers of ferrochrome protested against this assessment and filed a voluminous brief with the Treasury Department describing the costly process of manufacture and asserting that the continued importation of ferrochrome at a duty of $4 per ton would tend to cripple the domestic industry. All the steel hardening metals, except ferromanganese, it was claimed, were properly dutiable at 20 per cent. ad valorem as "metals unwrought," and ferrochrome having a very high value, the duty thereon if assessed at 20 per cent. would have amounted to many times the relatively low rate levied by the Tariff act on ferromanganese.

The alloys ferrochrome and ferrotungsten had been the subject of court decisions in two different jurisdictions when this question was brought specifically to the attention of the Treasury Department. In one case ferrochrome was held to be a manufacture, and hence not a metal "unwrought," while in the other case ferrotungsten was decided to be a metal unwrought. In order to give the domestic manufacturers the benefit of a careful review of the contentions set up, in the light of the latest information with regard to these comparatively new products, the Treasury Department gave instructions to make a new case involving the four products, ferrochrome, ferrotungsten, ferromolybdenum and ferrovanadium, by assessing them with duty at 20 per cent. ad valorem. This was done in the case of the United States *vs.* Roessler & Hasslacher Chemical Company. The importers appealed from the collector's decision, which was subsequently reversed by the Board of General Appraisers in a hitherto unpublished decision, as follows:

Decision of Board of General Appraisers.

The merchandise in question consists of ferrochrome, ferrotungsten, ferromolybdenum and ferrovanadium. The local appraiser returned the same as "metals unwrought," and duty was assessed thereon at the rate of 20 per cent. ad valorem under the provisions of paragraph 183 of the act of July 24, 1897. The importers claim that it is properly dutiable at the rate of $4 per ton, by similitude to ferromanganese, under the provisions of paragraph 122 of said act. It is undisputed that all of the articles hereinbefore enumerated are alloys of iron and mineral substances; that they are made in the same manner as ferromanganese, resembling it very closely in appearance, and that they are used for practically the same purposes—to wit, as a constituent for hardening and toughening steel.

The precise question raised here was passed upon in G. A. 5188 adversely to the Government. That decision was based upon the ruling in Dana *vs.* U. S. (116 Fed. Rep., 933), which was acquiesced in by the Government. . . .

A contrary view seems to have been taken in the Circuit Court of Appeals for the Eastern District of Pennsylvania, in the case of Hampstead *vs.* U. S. (122 Fed. Rep., 538), where the court, in passing upon the dutiable character of so-called tungsten ore, said, by way of dictum, per Buffington, Jr.:

"In the case of ferrotungsten, where it (tungsten ore) is compounded with iron, it first displays metallic characteristics; tungsten ore is first changed to tunstate of soda, then into tungstic acid, and then alloyed with iron to produce tungsten metal; and it should be noted that the proofs show such ferrotungsten is classified and assessed under section 183 as 'metals unwrought.'"

It appears from the undisputed testimony of several witnesses introduced at the hearing of protest of the Wm. Cramp & Sons Ship & Engine Building Company that ferromanganese is a crude metal, made by mixing manganese with a ferric iron ore, thus making an alloy. Not having been wrought into an article, and being imported in its crudest form, it would seem to be a metal unwrought, yet, in view of the ruling in the case *re* Dana, above cited, which passed directly upon this subject, we are constrained to hold that the merchandise is not dutiable as metal unwrought, but is a manufactured article not provided for in the tariff, and by virtue of section 7 of said act it is dutiable by similitude to ferromanganese, as claimed by the protestants.

The protests are sustained to this extent only and the decision of the collector accordingly reversed.

Opinion of Circuit Court.

After quoting the board's decision in full, Judge Townsend said:

Counsel for the United States contends that upon the evidence herein these metals are not wrought, because they are now in the first state in which they appear after reduction from the ore—that is, the first stage in which they appear as pure metals. There is nothing to show that they have been subjected to any process different from that proved on the former hearings in this court. I shall therefore follow the decision of this court in Dana *vs.* U. S. (116 Fed. Rep., 933), that they are not metals unwrought. This fact being proved, they fall within the decision in Dana *vs.* U. S. (91 Fed. Rep., 522, affirmed in U. S. *vs.* Dana, 99 Fed. Rep., 433), that they are similar in quality and use to ferromanganese. The decision of the Board of General Appraisers is therefore affirmed.

A consideration that is likely to move the Treasury Department to order an appeal from Judge Townsend's decision is the fact that the Board of General Appraisers, since handing down its opinion in the Roessler & Hasslacher case, has rendered two inconsistent decisions with regard to similar products. On February 3 last General Appraiser Fischer held that an importation invoiced as "best metallic manganese without carbon" was properly assessed for duty as "an unwrought metal" under paragraph 183, although claimed to be dutiable as ferromanganese. Analysis showed it to consist of manganese, but the General Appraiser nevertheless held that the similitude principle did not apply in this case. In the other case referred to, also decided by Mr. Fischer on the same day, certain so-called rutile (titanium) was classified by the collector as a metallic mineral substance in a crude state under paragraph 183, but was held by the General Appraiser to be free of duty as a crude mineral under paragraph 614. Chemical analysis showed it to consist of a "native impure titanic oxide, not a metal." The Department takes the view that General Appraiser Fischer was right in the first case and wrong in the second, and is disposed to believe that the Circuit Court of Appeals will so hold.

Views of Domestic Manufacturers.

The Treasury officials will be strongly urged to appeal this case by representatives of the Willson Aluminum Company, New York, who have co-operated with the Government throughout this litigation. The company are manufacturers of ferrochrome, which they contend cannot be made in this country if the protection thereon is limited to $4 per ton. In a brief filed by counsel for the company the question as to whether the similitude principle can properly be applied to ferrochrome and ferromanganese is discussed, and the commercial status of ferrochrome described, in part, as follows:

We have, then, two substances, both used in the manufacture of steel. The first, ferromanganese, is added to the steel while in progress of manufacture, because of the chemical action it has on various component elements of steel. As a result of such chemical action, physical benefits are apparent in the final product, but they are not due to the physical presence of ferromanganese in the final steel, but solely and entirely to its chemical influence on those component elements. The other, ferrochrome, is used as a physical addition to the finished steel for the physical benefits which it confers thereon. Physical and chemical action are totally distinct phenomena, and the fact that the results of such processes sometimes bear a resemblance to each other is not a ground for classing the two as similar. In fact, in their very nature they are totally different from each

other; they accomplish their objects by different modes of use, affect the finished products differently, and accomplish final results which are not at all similar. Such being the case, it would not seem that ferrochrome and ferromanganese are similar "either in material, quality, texture or the use to which they may be applied," and for that reason the decision of the Circuit Court of Appeals, finding that such similitude exists, is not sound and should not be followed.

Attention should be called to the fact that the intention of the legislative body should always govern in the case of ambiguity, or where it is evident that injustice or absurdity might result. The tariff laws of the United States, as has been said, are enacted for the purpose of furnishing revenue and of protecting American labor, and when it is evident that such protection as was intended is not furnished it becomes the duty of the courts to determine whether under existing laws an adequate remedy can be had. If in the present case ferrochrome is taxed by similitude with ferromanganese, ferrosilicon, &c., at $4 per ton, under paragraph 122 of the act of 1897, we have this rather anomalous result: Two products, ferrosilicon and ferromanganese, varying in value from $28 per ton in the former to $50 in the latter, are taxed at the rate of $4 per ton. Ferrochrome, a product whose market value is at least $250 a ton, is assessed and dutiable at the same rate. Thus we have two products, one worth about one-eighth and the other about one-fifth of the value of ferrochrome, taxed at exactly the same rate. It is true that discrepancies in tariff schedules are usually matters for Congressional action. At the same time, when it can be shown that such discrepancies need not exist if a logical interpretation be put upon the laws, it becomes at once the duty of the courts or the executive departments to so apply the laws as to avoid discrepancies or injustice.

Obviously, a duty of $4 per ton on an article worth at least $250 per ton when of the best quality affords no protection whatever to the American labor and capital engaged in its production. A plant for the production of high grade ferrochrome represents necessarily the investment of a large amount of capital. Two electrical horse-power will not produce more than a ton of ferrochrome per year, and the labor employed must be of the highest class and consequently expensive. The industry is, moreover, a new one, which under the policy of this Government should receive every protection to which it is entitled under the tariff laws.

In view of the increasing importance of these ferroalloys in the steel making industry it seems probable that the question of their dutiable classification will be carried to the United States Supreme Court. W. L. C.

Mexican Railway and Industrial Notes.

DURANGO, June 6, 1904.—Although the time has not arrived when the rainy season usually begins, showers have fallen in the States of Chihuahua, Durango, Zacatecas and in other localities. There comes complaint of drought from several States. The inauguration of the *temporada*, which will bring a break in the long term of dry weather and consequent activity among the large number of people engaged in the business of agriculture, is looked for with pleasant anticipations. Until Mexico takes up in earnest the all important question of irrigation and by an extensive system of works provides for the flooding periodically of an enormous body of land now lying practically waste, the losses occasioned by recurring drought and the consequent ever present fear in regard to possible short crops must continue to menace her people. A movement in this direction has been begun, but it is altogether insignificant by contrast with the necessities of the situation.

Local Demand for United States Manufactures.

Articles of household utility and manufactured material, which but a few years ago were almost unknown in this district, are becoming more common and more widely distributed every year. Most of these articles are of United States manufacture. They include many labor saving devices for domestic use, whose merits are quickly recognized when once their purpose is explained and operation mastered. Among the stocks carried by local hardware and machinery houses (which are almost exclusively establishments of German or other European origin) were noticed recently a varied assortment of oil heating, vapor and wood cook stoves, Alaska refrigerators, Blizzard ice cream freezers, Garland stoves and ranges, and other specialties in hardware and kindred lines, which are gradually coming into favor here. A load of barb wire, drawn by a dozen mules, was encountered in the streets a few days since, which afforded tangible evidence of the fact that the spirit of modern improvement is active in this region.

Railway Concessions and Construction.

By the terms of a concession obtained by the Dicha Mining & Smelting Company a railway is to be constructed in the State of Guerrero, running from Puerto Marquez to La Dicha. A continuation of the line to Chilpancingo is also provided for in the concession. Surveys are to begin within six months; 40 km. of the road are to be completed within 30 months, and at least 20 km. yearly thereafter. The time set for the completion of the railway is five years. The company have made a deposit of $5000 to bind the contract.

The owners of the Buena Vista plantation in the State of Vera Cruz contemplate building a narrow gauge line from the plantation to a connection with the Vera Cruz & Pacific Railway. It will be for both private and public use.

The Southern Pacific Railway Company have obtained a concession for an extension of the branch across the Colorado desert, which is to start at a designated point on the boundary line between Mexico and lower California and to terminate at another point on the boundary. Authority is also given the company to extend the line from Mexicoli to Ensenada. Six years is the time limit for construction. Bonds to the amount of $12,350 have been deposited as a guarantee by the railway company.

It is reported from Tula, Jalisco, that the Tula Iron Company intend to construct a railway, about 30 km. in length, between Sagula and Autlan, and that they will also enlarge their plant.

The concession granted three years ago to W. H. Norris of New York for a railway from the capital to Contreras and Cienequillas has been annulled and the deposit of $3000 forfeited, the concessionaire having failed to carry out his contract.

Industrial Notes.

The railways report good business both in the movement of passengers and freight. The Mexican Central has received the greater number of the large order for locomotives placed in the United States about a year ago. The International is in the market for a large number of coal cars to meet the increase in its coal carrying business. The Chihuahua & Pacific Railway Company have recently placed an order with the American Car & Foundry Company for 60 flat cars of 60,000 pounds capacity. The Guadalajara contracting firm of Ugarte & Garcia have ordered locomotives from the H. K. Porter Locomotive Works of Pittsburgh, Pa.

Rumor is rife in Mexico with regard to the plans and intentions of the Pacific Steel Company, lately organized in the United States, and credited with having purchased extensive bodies of iron ore lands in the western part of the republic. Nothing authentic is in circulation, the reports being founded upon mere conjecture and hence are not worth repeating.

The concession previously reported as having been applied for on behalf of United States manufacturers of wire cables has been granted by the Department of Fomento. The firm interested are said to be A. Leschen & Sons, St. Louis, who are reported to have in view the establishing of a plant somewhere in Mexico.

The idea of opening in the capital a permanent exhibition of domestic and foreign products has been discussed many times within the past 10 years, and one or two fruitless efforts have been made to carry out the plan. The project at length seems to have assumed tangible shape and may be said to be fairly launched. The steel structure in which the exhibits are to be placed has arrived from Germany, and is in process of erection. The intention is to defer the opening of the exhibition until the close of the St. Louis Exposition, in order that some of the exhibits may be secured. The exhibits received in the exposition will be exempt from the payment of duty for a year. The general admission to the grounds will be free, as the entire revenue from the affair will be derived from the exhibitors alone, who will pay a stipulated price for space.

The Tabasco Transportation Company, Frontera, Tabasco, have made a contract with H. I. Crandall & Son, Boston, for the construction of a new steel dry dock, the cost of which will be about $50,000, Mexican money.

Jackson & Dunn is the style of a new firm of machinery manufacturers' agents in the City of Mexico.

A fire in Guadalajara last week destroyed the hardware store of Quirino Marin, causing a loss of $14,000, partly covered by insurance.

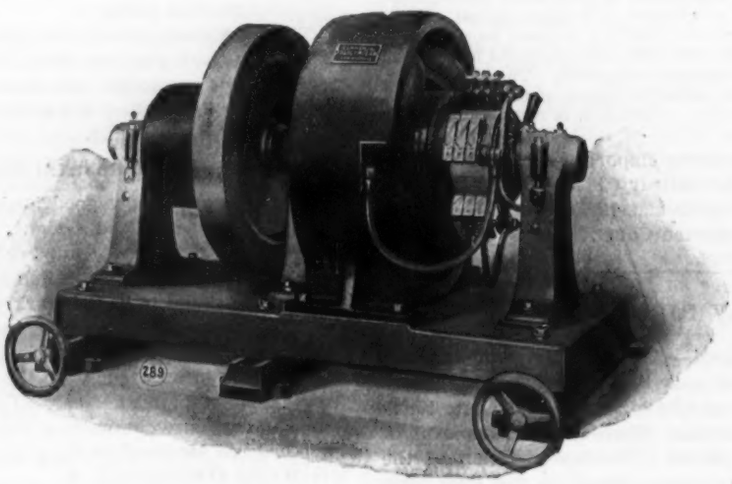
Application has been made for a concession by Miguel S. Macedo of the City of Mexico for the use of water from rivers in the district of Iguala, State of Guerrero, for irrigation and power purposes.

A. H. Heber, president of the California Development Company, has applied for an extension of the concession to use the waters of the Colorado River for the irrigation of a large tract of agricultural land near the Imperial settlement, in Lower California.

Application for water power privileges have also been made by Antonio A. Moll, who desires to use 10,000 liters per second from the River Ozoloapam, Vera Cruz, for motive power purposes, and by Miguel Morga of Topia, Durango, who intends to establish an electric lighting system for that town. J. J. D.

A Three-Bearing Generator for Gas Engine Service.

An increasing demand for a line of small dynamos for operation in connection with gas engines has prompted the Commercial Electric Company of Indianapolis, Ind., to prepare for the market a line of machines having three bearings and a heavy balance wheel mounted upon the shaft, for the purpose of overcoming the fluctuations in speed occasioned by the irregular impulses of the gas engine.



THE COMMERCIAL ELECTRIC COMPANY'S THREE-BEARING GENERATOR FOR GAS ENGINE SERVICE.

This construction makes it possible to secure good lights with almost any practical gas engine, and makes unnecessary the awkward countershaft previously used in belted dynamo installations. Another advantageous feature of this arrangement is that it relieves the dynamo shaft of the damaging strain, which is encountered when the heavy balance wheel is used on a dynamo having but two bearings.

As will be noted from the accompanying illustration, the armature is carried by three pedestals mounted upon a cast iron base. Each of these contains a bronze lined self oiling bearing. A paper pulley is mounted direct upon the hub of the balance wheel, and both of these parts are supported between two of the pedestals, which come close to the hubs.

This arrangement, together with an extra heavy shaft, obviates strain from the weight of the balance wheel or the pull of the belt upon the portion of the shaft on which the armature is mounted.

The entire machine is carried upon sliding rails with hand wheels and screws, by which it can be shifted for tightening the belt.

The dynamos are built in this manner in sizes ranging from ½ kw. to 30 kw., inclusive.

Notes from Great Britain.

The Iron Trade.

LONDON, June 4, 1904.—Compared with a month ago the iron market in practically all departments is unmistakably weaker, and in the Midlands prices are falling, pig iron being exceptionally flat and unresponsive. The Midland and Northeastern ascertainments have been announced this week, and while the Northeastern situation appears to be better than the Midland, yet, taking the market as a whole, the figures are not encouraging. The Midland accountants reported upon the returns of the sales of iron made by the 11 selected firms for March and April. They certified the average net selling price to have been £6 8s. 5.51d. per ton. As compared with the months of January and February last, the average selling price has declined 1s. 9.45d.

In the Northern iron trade, as gauged by the ascertainment, it would appear that for March and April the return is satisfactory, the output of rails, plates, bars and angles showing over 200 tons increase. The net average price, £5 19s. 10d., showed a small reduction of 8 pence; bars formed about two-thirds of the whole production.

In consequence of the general state of trade, we are now back upon the old see-saw game between buyer and seller, the buyers holding their hands and only buying from hand to mouth, and the sellers showing more anxiety than usual to quote to specifications. Marked bar makers are steadily employed, and even some of the better known makes of unmarked bar are in fairly constant demand, but the generality of makers find trade inconveniently dull and are shading quotations on all hands.

In regard to steel, last week, after a long absence from the market, the agents of German firms began testing the market at lower prices. These offers apparently came from second hands anxious to clear stocks, the German Syndicate still maintaining its quotations at £4 10s. for billets and £4 12s. for sheet bars. There is undoubtedly much German steel coming into England at the present time, but the trade has attracted no particular attention, and is of a routine character. I append herewith standard quotations as they are to-day, but it will be understood they are above actual contract prices:

Pig Iron: Scotch warrants, 51 shillings 6 pence; Middlesbrough warrants, 43 shillings 2 pence. Forge qualities: Staffordshire cinder, 45 shillings, part mine 46 shillings 6 pence to 48 shillings, all mine 60 to 65 shillings, best all mine 75 to 80 shillings, cold blast 95 to 100 shillings; Northamptonshire, 44 to 45 shillings; Derbyshire, 45 to 46 shillings; North Staffordshire, 45 shillings 6 pence to 46 shillings 6 pence.

Public stores stocks, Thursday, June 2:	Tons.
Connal's, at Glasgow	9,595
Connal's, at Middlesbrough	85,280
Connal's, at Middlesbrough, hematite	300
Hematite, West Coast	14,628

Finished Iron: Marked bars £8, Earl of Dudley's brand £8 12s. 6d., second grade £7, common unmarked bars £5 17s. 6d. to £6 5s., North Staffordshire bars £6 7s. 6d. to £6 10s.; angles,

£6 5s. to £6 10s.; sheets, singles £6 5s. to £6 7s. 6d., doubles £6 7s. 6d. to £6 10s., trebles £7 to £7 2s. 6d.; galvanized corrugated sheets, f.o.b. Liverpool, £10 2s. 6d. to £10 7s. 6d.; hoop iron, £6 17s. 6d. to £7 2s. 6d., nail rod and rivet iron £6 12s. 6d. to £6 15s., gas strip £6 2s. 6d. to £6 5s.

Steel: Bessemer billets, £4 7s. 6d. to £4 10s., Siemens billets £4 10s. to £4 15s., mild bars £6 to £6 5s., girder plates £5 17s. 6d. to £6, boiler plates £6 15s. to £7 5s., girders, £5 15s. to £6 5s., angles £5 5s. to £5 12s. 6d.

Storage of Heat for Steam Generation.

The storage of heat has been one of the dreams of the engineer for years and various schemes have been suggested. One is now being tried at an electric light station in London and the results justify some reference. The boilers of this station, of the water tube type, were capable of generating steam of 125 pounds absolute pressure at the rate of 12,000 pounds per hour. While this suffices for most purposes, the demand is now so great at some times that the boilers are inadequate and no ground is available for extension of the plant. This is a problem which besets many electric light engineers. The period of maximum demand is, moreover, so fluctuating as to be very uneconomical. Heat storage, if it could be realized, might be a great advantage. The arrangement adopted in this London case is to fit a large cylindrical vessel containing water above the ordinary steam drum of the boiler. When there is only a normal demand upon the station some of the steam from the boiler is passed into this water storage cylinder, with the result that the water is kept at a very high temperature, so that when the extra demand comes upon the station this water is fed into the boiler, which, owing to this hot feed water, can give 15,000 pounds of steam per hour—an increase of 25 per cent. It is said that on occasion the evaporation was actually 25,000 pounds, but 25 per cent. is probably sufficient, especially as there is no priming. There is no economy in the system; the coal consumption must increase even at a greater rate than the evaporation, as there is considerable loss through heat radiation from the hot water storage tank, so that the system may meet special conditions, but beyond that its practical advantages are not observable.

Liquid Fuel for War Ships.

An important event happened in the British Navy last week, when the destroyer "Spiteful," the first British war ship to be fitted for the consumption of liquid fuel only, was passed as fit for sea. The "Spiteful" will burn only oil in her furnaces, and as a consequence her stoker complement will be reduced by a dozen—a very important economy.

Economic Developments in the Cleveland Ore District.

An announcement is made from Middlesbrough which may have an important bearing upon the duration of the iron mines of the Cleveland district. In addition to the deposits now being worked, which will afford abundant supplies to the limited number of firms owning them for a long time to come, there are seams of greater impurity now neglected because the ore cannot at present be profitably converted into pig iron. Experiments recently conducted in the district in the application of an American process of calcination encourage the hope that this inferior ironstone may be brought into use much sooner than has hitherto seemed likely. It is stated that further trials on a larger scale may possible prove that by the application of this process the cost of producing pig iron from it will not prove very much greater than that of making Cleveland iron from the ores now being used. The discovery is not likely to be of immediate importance, even if the hopes it has raised should be realized; but later on it may be of great benefit to the Middlesbrough iron industry.

The Railway Car Building Combine.

Last year I recorded in these columns the formation of the railway car building combine, the Metropolitan Amalgamated Railway Carriage & Wagon Company, Limited. So far their operations have been unmistakably successful. The combined capital of the company is nominally £1,500,000, of which over £1,184,000 has been issued. Before the amalgamation the combined profits of the concerns working separately amounted to £137,000. For the first year of their working the amalgamated company reached a profit of £140,926, and paid a dividend of 10 per cent. on the ordinary shares. For the past year the profits have risen to £161,791, and after providing for the preference dividend there is a balance of £140,499. A dividend of 10 per cent. on ordinary shares has been again declared. This leaves a surplus of £62,018, and it has been decided to appropriate £50,000 for the purpose of a reserve fund. It is pointed out that in the assets not one penny figures for good will, and there are no inflated assets of any kind whatever.

Profits, Dividends and Finance.

The Ebbw Vale Steel, Iron & Coal Company announce a dividend of 6 per cent. This compares very badly with 5 per cent. paid last year, as since then the capital has been cut down by half.

The Midland Coal, Coke & Iron Company have had a bad year, with a credit balance of only £1986, as compared with £9370 in 1902, £14,031 in 1901 and £60,804 in 1900.

The Tredegar Iron & Coal Company declare a dividend of 5 per cent. on the amounts paid up on *a* and *b* shares.

Ruston, Procter & Co., the great agricultural engineers, report a profit of £60,523, and pay a dividend of 6 per cent.

Dorman, Long & Co., Limited, the iron masters of Middlesbrough, have issued £250,000 of 6 per cent. second mortgage debenture stock. The recent alterations and developments of the Britannia Mills, the Clarence Steel Works and the Construction Department have been more extensive and costly than was at first intended.

John I. Thorneycroft & Co., the well-known torpedo boat builders, have acquired the business of Mordey, Carney & Co. of Southampton. One of the prime reasons for the acquisition of the Southampton works is to provide greater facilities for repairs, and in the case of the larger torpedo craft to save the long and awkward journey down the Thames from Chiswick.

Coded Lists of the British Engineering Standards.

I have received from Robert Atkinson, Ltd., of Salisbury House, London Wall, London, E. C., Volume I of the British Engineering Standards Coded Lists, issued by authority of the Engineering Standards Committee. The volume in question exceeds 500 pages, and in addition to the necessary codes is an unusually valuable compendium of information in regard to the trade. It contains a directory of British rollers of sectional iron and steel, constructional engineers and merchants, with the sizes they roll or stock. It also gives a list of railway carriage, wagon and tram car builders and shipbuilders. The standard sections are all set out in full size, and every item of necessary information in regard to the standards will be found here. In addition it contains an interesting account of the operations of the Engineering Standards Committee. The price in London is 21 shillings. Inasmuch as the codes are issued under the authority of the Engineering Standards Committee, it would follow that in practice these codes will be adopted by business men in cabling.

Two Useful Directories.

I have also received from Kelly's Directories, Ltd., of 182 High Holborn, London, W. C., Kelly's Customs Tariffs of the World. The book gives all the tariffs at present in force throughout the whole world, together with tables of foreign moneys, weights and measures, with their English equivalents. It is a valuable book to have in an export office.

I have also received from the same firm the eighteenth edition of the Directory of Merchants, Manufacturers and Shippers of the World. The previous issue of this volume contained the customs tariffs of all nations to which I have alluded above, but the volume has become so large that it has been deemed necessary to issue the two volumes separately. American readers are naturally interested in the directory so far as it gives them information of other countries, but the publishers of the volume find it most difficult to keep correct that portion of the volume relating to the United States. The specializing features of American manufacturers give great trouble to compilers of directories.

Forthcoming Large Contracts in Egypt.

Since practically all the Powers concerned have now given their adhesion to the clauses in the Anglo-French

agreement referring to the application in constructive works of the surplus funds of the Egyptian Caisse de la Dette, arrangements are at once to be made for various railway and harbor surveys in Egypt. Some 2000 miles of new railways are to be built, much of the existing stock on the line is to be removed, and several new official departments are to be granted to assist and control the internal development of the country.

The Present Stage of the Tariff Movement.

During the past two months but little interest has been evinced by business men in the movement in favor of a protective tariff. It does not follow, however, that nothing is being done. In point of fact, the tariff changers have under the surface been unusually busy, not only in extending their organization, but also in capturing the present conservative party. At a dinner held the other night, addressed by Joseph Chamberlain, subscriptions were announced to the tune of $125,000. But if the agitation for change in tariff policy is being persisted in by its supporters the opposition to it grows more effective and more relentless. The suspicion is gradually taking root that the Prime Minister has definitely come to the conclusion that protection is a bad card to play at the next election.

Representation of the German Steel Trust.

A few weeks ago it became obvious that some co-operation would be necessary betwecn the agents of the various integral parts of the German Steel Trust. Accordingly those agents concerned came together, 12 in number, and decided upon the formation of a limited liability company, the entire capital of which is to be held in predetermined ratios. Since the original 12 did not meet the number has been raised to 12 by the adhesion of the Phœnix Works to the Steelworks' Union. The London agent of the Phœnix would, of course, in the circumstances, be included. The new company will be known as the London Selling Agency, and it is expected that the German Steel Trust will make no objection to the arrangement, although no doubt it may make some modifications of a minor character. S. G. H.

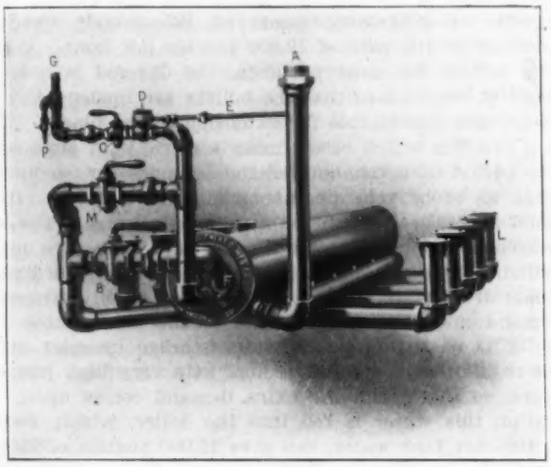
A New Oven Heating Device.

The Oven Equipment & Mfg. Company of Stamford, Conn., have begun the manufacture of a new device for the heating of ovens for enameling, japanning and like baking purposes where a moderate degree of heat is required. The equipment is shown in the accompanying illustration. The long chamber and the five lateral pipes on either side are within the furnace, while the piping and valves shown in the engraving are outside of the oven and at its back away from the doors. The fuel used is gas. which is admitted to the long tubular chamber mixed with air before reaching the burners, under the general principle of the Bunsen burner. Air is also supplied to the chamber under pressure to assist in combustion. After performing this function the air is forced through openings in the bottom of the chamber and through the lateral pipes, escaping into the oven. Thus the oven receives heat from the air from the burner chamber, and also from radiation from the chamber itself. The chamber consists of an 8-inch wrought iron pipe. In it are three rows of gas jets and three rows of air jets.

Referring to the accompanying engraving, the air under pressure is received from the pipe A, and the gas from the pipe G. The pipe A passes into the oven along the side of the chamber and out again along the other side of the chamber, receiving considerable heat while within the oven, which heat assists in a complete combustion of the gas in the chamber. The valve B regulates the supply of air to the chamber. The valve C regulates the amount of gas supplied. The valve M regulates the mixture of the air with the gas. The pipe E is a by-pass from the air supply pipe to the automatic cut off valve D, which has an important function to perform in insuring safety of operation. As will be seen in the illustration, the stem of the valve protrudes through the top. While the stem is down no gas is admitted to the gas supply pipe. In order to ignite the burners the valve stem must be lifted by hand after the air pressure has been turned on. The air pressure holds the valve open, but the instant it is removed the valve closes and shuts off the supply of gas. The little pipe P is for a pilot light. F is a peep hole to enable the operator to watch the interior of the chamber when desired.

By means of this equipment the temperature of an oven may be raised from that of the atmosphere of the room to nearly 400 degrees F. in half an hour. By means of the regulating valves the oven temperature may be maintained at given heat for indefinite periods.

The air is admitted to the chamber at a pressure of ½ pound, which provides 70 cubic feet per minute. The air pressure has another use, in driving gases created in baking processes out of the oven, through a vent pipe having its orifice within the oven near the bottom to take those fumes which are heavy enough to sink to the bottom.



A NEW OVEN HEATING DEVICE.

It requires about 210 cubic feet of gas an hour to operate this furnace.

The caps on the lateral pipes L are adjustable up and down, in order to equalize the escape of air from the chamber in case the pipes on one side of the oven had to be longer than those on the other side.

The Allis-Chalmers Company.

The annual report of the Allis-Chalmers Company for the year ending April 30, 1904, just issued, shows a surplus for the year, after allowing for three preferred dividends, of only $99,499. These figures compare with a surplus in 1903 and 1902 of $516,076 and $304,759, when the full 7 per cent. rate was paid on the preferred stock. Following is a condensed comparative statement of the operations of the company for three years:

	1904.	1903.	1902.
Net profits	$952,624	$1,653,576	$1,442,259
Dividends	853,125	1,137,500	1,137,500
Surplus	$99,499	$516,076	$304,759

Following are the balance sheet and the profit and loss account of the company on April 30, 1904, with statements showing the net profits for the fiscal year ending that date, and the provisions made for all known contingencies that may result in losses upon business carried over into the new year, but exclusive of the results of the business of the Bullock Electric Mfg. Company, recently acquired. No comparison can be made of the figures contained in the balance sheet, as the current one has been prepared along somewhat different lines from that issued a year ago:

Assets.

Capital assets: Real estate, buildings, plant, machinery, good will, &c.		$30,246,084.59
Current assets:		
Bills and accounts receivable	$3,437,519.95	
Stocks of merchandise, material and work in process (less payments on account) at factory cost, not exceeding present market values	2,914,878.42	
The Bullock Electric Mfg. Company of Ohio for working capital,, and an interest in the Allis-Chalmers-Bullock, Limited, of Canada	463,000.00	
Cash	1,060,113.11	
		7,875,511.48
Total		$38,121,596.07

Liabilities.

Capital liabilities:		
Preferred stock*	$16,150,000.00	
Common stock	19,820,000.00	
		$35,970,000.00
Current liabilities:		
Accounts payable	$1,014,395.75	
Mortgage on Norwood Foundry, due March 22, 1905	34,000.00	
		1,048,395.75
Funds:		
Depreciation reserves		478,364.75
Surplus		624,835.57
Total		$38,121,596.07

* Dividends at the rate of 7 per cent. per annum cumulative.

Profit and Loss.

Balance at April 3, 1903, as per last annual report		$820,835.57
Net profits for the fiscal year ending April 30, 1904, after deducting all expenses of manufacturing and selling, and after making provision for depreciation of plants and for possible bad debts	$952,624.08	
Less three quarterly dividends paid on preferred stock, amounting to 5¼ per cent.	853,125.00	
Balance of net profits, constituting the surplus for fiscal year		99,499.08
Excess of par value over book cost of $100,000 preferred stock and $180,000 common stock of the company acquired in settlement of current business contracts and since canceled		201,951.07
		$1,122,285.72
Special appropriations have been made for the following purposes:		
For cost of licenses, patents, experimental construction and installations in connection with gas engine, steam turbine and electrical departments, and for special expenses and depreciations	$201,951.07	
For possible losses on existing contracts and further shrinkage in present value of materials and supplies	99,499.08	
For reduction in the cost of work in process to present basis of value	196,000.00	
		497,450.15
Surplus, as shown in balance sheet		$624,835.57

In his report to the stockholders President B. H. Warren says: "After a most careful consideration of the various changes that have taken place in the methods recently introduced in Europe and this country for the development and utilization of power, the Board of Directors decided to establish departments for the manufacture of gas engines, water and steam turbines and electrical machinery. The investigations, experimental construction and negotiations involved in the thorough consideration of these subjects, both at home and abroad, have continued during the past two years with the purpose of adopting only such systems as have been proved commercially the most economical in construction and maintenance and the most efficient in operation." He then enumerates the arrangements made for the right to manufacture the Nurnberg gas engine, the Escher-Wyss & Co. hydraulic turbine and the Turbine Advisory Syndicate's steam turbine, all of which have been previously referred to in these columns.

The Pennsylvania Railroad Company on June 9 awarded a contract for the cement which will be used in their tunnel from Weehawken to Long Island City and in the terminal stations and power houses connected therewith. The contract was secured by the American Cement Company of Philadelphia through their New York branch, the United Building Material Company. This, it is expected, may prove to be the largest contract for Portland cement ever given out. The largest contract of the kind hitherto was that for 1,500,000 barrels for the New York subway, which was likewise Giant cement furnished by the same company.

The Illinois Tunnel Company, Chicago, are building an incline to connect their tunnel on Michigan avenue with the dump on the Lake front in order to carry off material obtained in excavating buildings directly to the lake front, where it can be used for filling purposes, instead of hoisting it on lighters in the river and dumping it into the lake as has been done heretofore. The incline is being built by sinking the Jackson metal sheet piling across Lake Front Park on a curved line leading to the viaduct of the Illinois Central Railroad at Harrison street.

The Patterson Belt Polishing Machine.

The Miami Valley Machine Tool Company of Dayton, Ohio, are placing upon the market what they term their Patterson belt polishing machine. As shown in the accompanying illustration, it consists chiefly of a special stand which is fastened to the floor the proper distance from a regular grinding machine containing a flanged wheel corresponding to a similar one placed on the special stand. These flanged wheels carry the polishing belt.

THE PATTERSON BELT POLISHING MACHINE.

The emery grinder carries 10 x 1½ inch emery wheels fitted with a flanged pulley. The attachment or auxiliary stand is fastened to the floor by means of two lag screws, and the tightening and loosening of the belt is accomplished by means of moving forward or backward the foot lever shown in the illustration. The flanged pulleys carrying the endless polishing belt are 7 inches in diameter and capable of carrying a belt 3 inches or less in width.

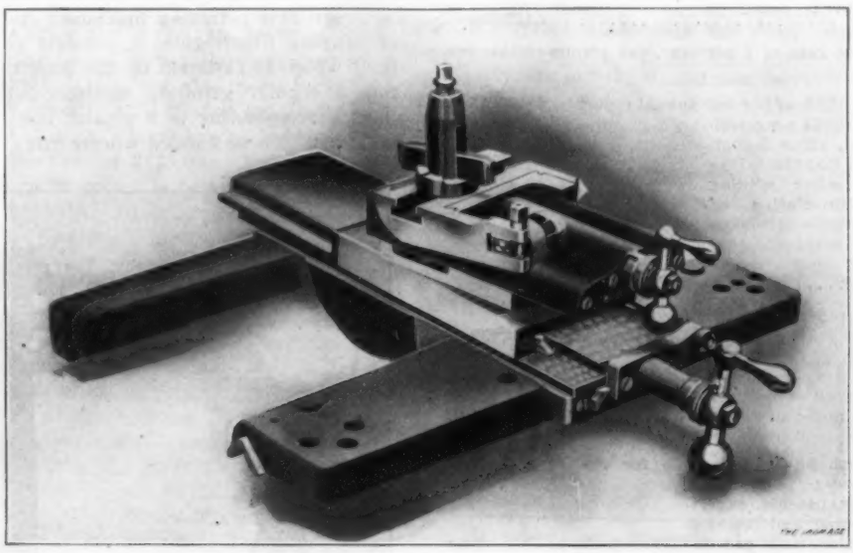
In the illustration the belt is lying on the floor at the bases of the stands. The stud on which the flanged pulley revolves is drilled with holes at right angles to each other, the end being tapped out to receive the compression grease cup shown in the engraving. The horizontal adjustment of the apparatus is 7 inches.

Vice Chancellor Reed, in the Court of Chancery at Trenton, N. J., on June 13, handed down an opinion in the case of the Vulcan Detinning Company against the American Can Company relative to the detinning process exclusively claimed by the former, and says: "I will allow a limited injunction, restraining all the defendants from further communicating any part of the trade secret to any person, and from giving any further instructions concerning the process to any employee, and from employing any person in the transaction of the business involving the use of the trade secret, other than those now employed."

The Pratt & Whitney Compound Elevating Rest.

A lathe rest of entirely new design and combining great rigidity with ease of adjustment has just been placed upon the market by the Niles-Bement-Pond Company. It is the product of their Pratt & Whitney plant at Hartford, Conn.

The slot for the tool post is cut in a piece which has a slight rocking movement. One end of this piece is extended and has a clamp bearing fitting on an eccentric shaft, by the movement of which the point of the tool is raised and lowered. A clamp screw is provided for tightening the bearing on the eccentric shaft. This screw also clamps solidly the whole elevating mechanism. The same wrench used in tightening the clamp screw is used for revolving the eccentric shaft.



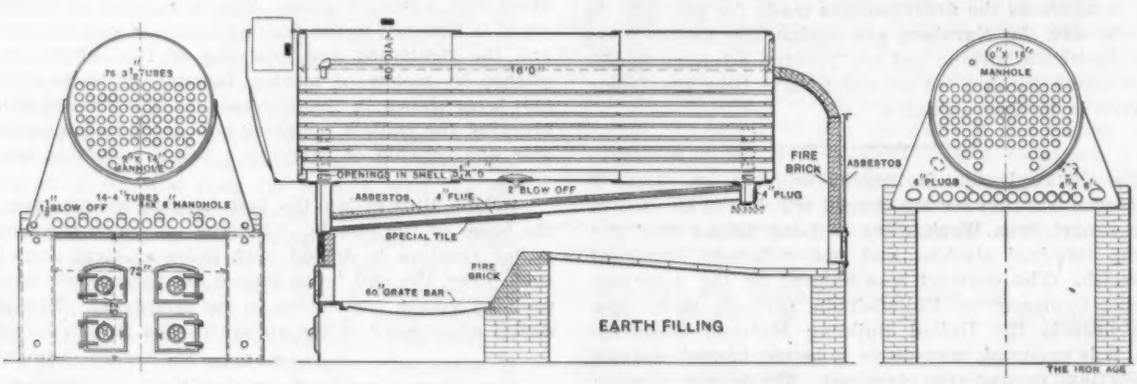
THE PRATT & WHITNEY COMPOUND ELEVATING REST.

By this mechanism the tool can be adjusted very accurately to hight, a stepped collar being used to get the tool to approximately the right elevation.

The swiveling device for this rest is the same as usually furnished with the Pratt & Whitney plain compound rest.

The Bonson Combined Water Tube and Tubular Boiler.

Another endeavor to secure the advantages of both the water tube and tubular types of boilers without the disadvantages of either is illustrated herewith. The Bonson boiler consists of the ordinary tubular boiler with vertical water legs riveted and connected at either end, these water legs being connected with each other by a series of 4-inch water tubes. These water tubes form the roof of the combustion chamber of the furnace, and in the space immediately above the grate bar where incandescence is desired to facilitate combustion the water tubes have on their lower surfaces a lining of fire brick or tile, which may, if desired, be extended the full length of the tube. To prevent the loss of heat above the tubes their upper surfaces are covered with asbestos. This series of water tubes connecting the water legs is stated by the manufacturers to produce so rapid a circulation of the water in the boiler that the difference between the maximum and the minimum temperatures at the hottest and coldest point of the boiler does not exceed 13 degrees. The furnace is rectangular in shape, making available a very large grate area. This form is stated by the builders to insure an even distribution of the products of combustion in their return passage through all the fire tubes instead of having most of the work done by a few tubes centrally located. The builders claim that they can force this boiler to a point where they will secure a boiler horse-power from each 3 square feet of heating surface. It is being built in units from 75 to 400 horse-power by the Bonson Furnace & Boiler Company, Marquette Building, Chicago. The company purpose erecting a shop for the manufacture of the water legs, furnaces and other special parts of the boiler, but at present are having this work done by contract. The upper member of the boiler is an ordinary horizontal tubular boiler.



End Elevations and Longitudinal Section of the Bonson Combined Water Tube and Tubular Boiler.

The Parkersburg, Marietta & Interurban Railway Company are extending their present power station at Parkersburg, W. Va., with Westinghouse-Parsons steam turbines. A 400-kw. unit will be installed, which will operate on 150 pounds of steam and 28-inch vacuum. Steam will be furnished by water tube boilers, without a superheater. The generator will furnish two-phase 60-cycle current at 2200 volts, to a single-phase distribution system for local lighting.

The Hainsworth Safety Catch for Elevators.

An exhibit in the Mines and Metallurgy Building at the World's Fair, which is attracting considerable attention and favorable comment, is an ingenious safety catch for attaching to mine hoists or other elevators. In the event of the breaking of the supporting cable the car is immediately arrested from falling by pointed dogs which dig into the wooden guides. The accompanying illustrations give an idea of the nature of the device. Fig. 1 shows it attached to a mine skip as it appears in ordinary operation. Fig. 2 shows the construction in detail, with the catch out of action, and Fig. 3 the appearance when, after the breaking of the rope, the device has operated.

The construction is extremely simple, consisting of two toggle arms, A A, pivoted together at the point B on a hollow bushing, through which passes the pin holding shackle C. To the outer ends of the toggle arms are attached shoes or dogs, a detail of one of which is shown on the left in Fig. 3. These are of steel and are pro-

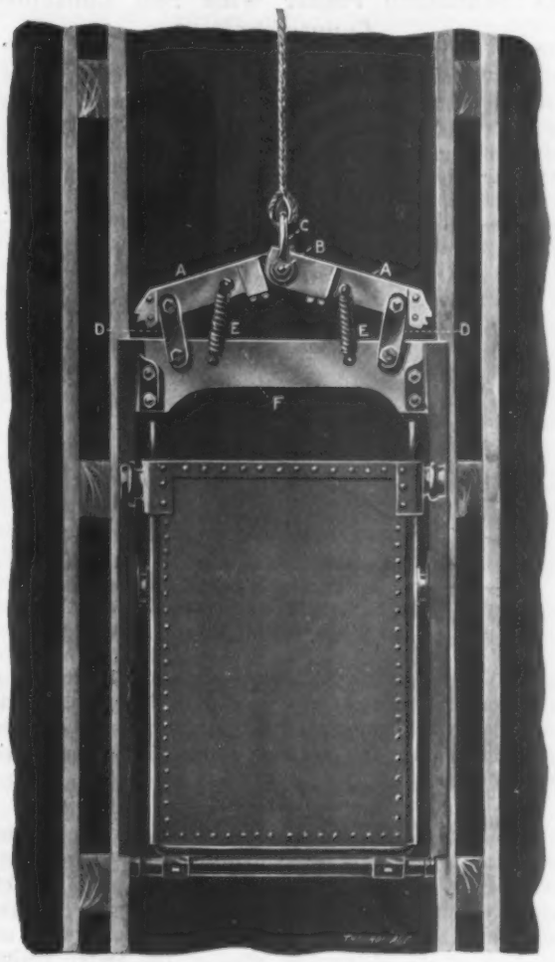


Fig. 1.—The Hainsworth Safety Catch as It Appears in Ordinary Use.

vided with strong projecting teeth of pyramidal form, which gouge into the guides when the catch comes into operation. The arms are connected to the cross bar F of the skip or elevator by means of four connecting links, D. D. Then tension springs E E, which are normally distended, insure the dropping of the toggle arms when the rope breaks, but are not depended upon for the gripping. As the arms descend the upper smaller teeth, coming in contact with the guides, positively throw the inner ends of the toggle arms down until the point B falls below the horizontal line of centers and locks the catch. When this position is reached the lower larger teeth, upon which most of the work of stopping depends, score into the guides. This means of locking the catch prevents its becoming disengaged by the shaking and lashing of the broken rope, as the weight of the car must be lifted to disengage the catch. The springs also serve the purpose of largely reducing the shock on the rope at the moment of starting the car from a position of rest in its ordinary operation.

As long as there is any tension on the rope it is impossible for the catch to operate, but as soon as this is released the tension springs start the dogs into action. While the stopping of the car by these dogs is almost instantaneous, the shock is by no means as great as might at first be supposed, for the engaging of the dogs is sufficiently gradual to allow them to dig into the guides for some little distance before coming to an absolute condition of rest.

The catch has been severely tested on a full sized mine skip at the Dolcoath mine, Camborne, England, and proved itself entirely reliable. Three trials were made. In the first the empty skip was raised by a hemp rope which was cut, and the catch coming immediately into operation brought the skip to a standstill in a distance of 4 inches. In the second trial the skip was loaded

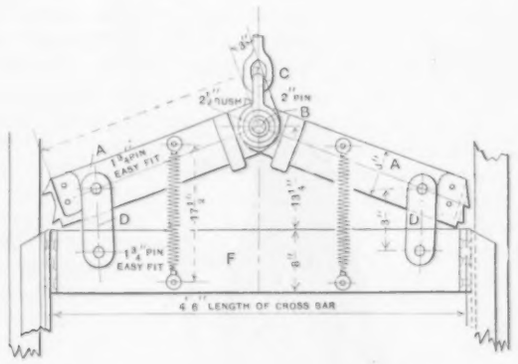


Fig. 2.—Details of Construction, Showing Catch Out of Action.

with 1 ton of iron, and after cutting the rope it was stopped after a drop of but 5 inches. In the third test the skip was loaded to a weight of about 4 tons, and was brought to a dead stop after sliding down a distance of 3 feet 9 inches without any excessive shock. The guides were 4 x 5 inch pitch pine, 3 feet 4 inches between faces.

It should be remarked that the distance between the horizontal dividers which support the guides has little or no effect upon the working of the catch, as it does not depend upon the outward pressure upon the dogs. The lower edges of the points on the dogs are inclined in such a way that they gradually bite into the wood.

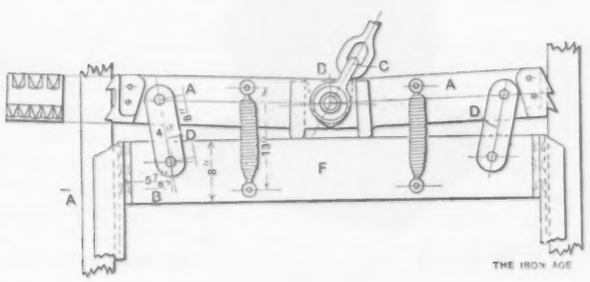


Fig. 3.—Details Showing Catch in Operation.

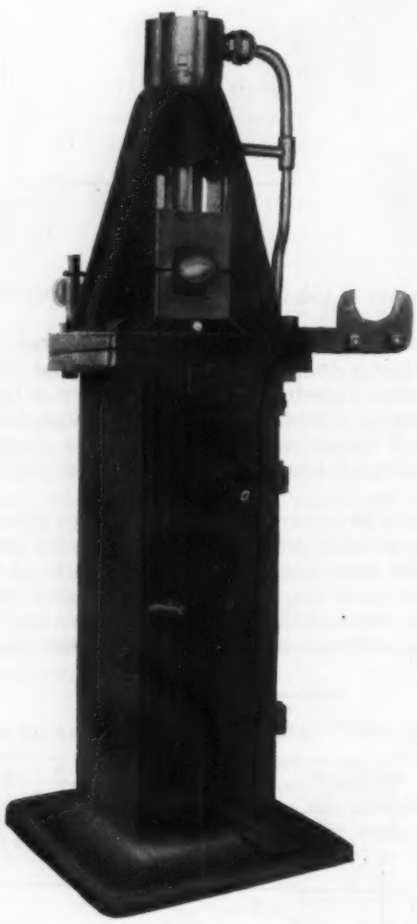
Even if it were not so, the catch would positively take effect at the nearest set of dividers. As was shown by the third trial, where the skip slid 9 inches after the full imbedment of the dogs, there was practically no lateral stress.

The inventor, R. Hainsworth, is exhibiting two models of his catch in the British section of the Mines and Metallurgy Building. These are applied to mine skips, but one is arranged for the substitution of a model passenger elevator. They perform precisely as do full sized models and, being loaded with proportional weights, give an extremely impressive demonstration of the efficacy of the catch. The cars are suspended by ropes, which in place of being cut are simply released. In this way, however, it is difficult to give the car even the speed which it might obtain by gravity, as the catches operate instantly when the tension on the ropes is relieved. A more severe test is arranged for by placing under the

toggle links a small strut, which is attached by a cord to one of the dividers. With this, when the car is dropped, the catch is prevented from taking hold until a fall of about 4 feet has taken place and the strut is snatched out by coming to the end of its cord. It is estimated that in this way a velocity of about 1000 feet a minute is reached before the device acts. Nevertheless the model, which was weighted far beyond its equivalent capacity of ore, was stopped within 3 inches from the time of the engagement of the dogs. Another demonstration consisted in the placing of a beam across the top of the skip, upon which the combined weight of two men was placed but failed to force the car down more than an inch from its original position.

The McGrath Pneumatic Flue Welder.

We illustrate herewith the single cylinder type of the McGrath pneumatic flue welder, a device that has recently been perfected by the Draper Mfg. Company,

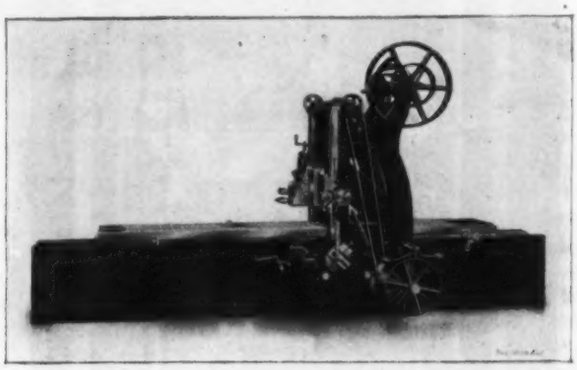


THE McGRATH PNEUMATIC FLUE WELDER, SINGLE CYLINDER TYPE.

Port Huron, Mich., and is being sold by the Scully Steel & Iron Company, Chicago. This machine will weld flues from 1 inch up to 4½ inches in diameter, it being only necessary to change the mandrel and dies for different sizes of tubes. The machine is strictly pneumatic, no belt being required—an important factor, as boiler shops and smith shops are frequently not equipped with line shafts. The tube and safe end, at welding heat, are inserted over the mandrel under the hammer, and by pressure on a foot lever the hammer is set in motion, delivering about 2000 blows per minute, the operator slowly turning the tube around. The tube in this way is welded in from two to four seconds, according to its diameter and the welding heat present. Scarfing is done in the welding aperture of the single machine, or, in the double machine, one aperture is frequently used for scarfing and the other for welding. In scarfing, the end of the tube to be scarfed is held over the end of the mandrel at whatever angle is desired to form the required bell. By reversing the angle the end of the tube may be tapered, instead of belled. The end of the tube may be swaged or reduced by the same method as is used in welding, the open end of the tube being held under the hammer and slowly revolved under the swaging die until the reduction is accomplished. Each size of tube requires a separate set of dies and mandrel. The changing of flue dies or the substitution of a swaging die or scarfing mandrel is quickly effected. The machine is also made with two cylinders. By use of the double cylinder machine it is possible to both swage and weld in one heat, the swaging die being fitted under one hammer and the welding dies and mandrel under the other. The single cylinder machine weighs 483 pounds, is 4 feet 6 inches high, and occupies about 2 square feet of floor space. The double cylinder tool weighs 587 pounds, is 4 feet 6 inches high, and occupies a floor space 18 x 18 inches. It is claimed that this machine will make a perfect weld, leaving the flues smooth inside and out and uniform in thickness.

The Whitcomb Planer with Self Contained Countershaft.

The Whitcomb Mfg. Company of Worcester, Mass., have just completed the design of a new planer embodying a self contained countershaft. It will be noted in the accompanying engraving that the countershaft is supported by means of arms protruding above the brackets



THE WHITCOMB PLANER WITH SELF CONTAINED COUNTERSHAFT.

supporting the housings. These arms are in reality a portion of the brackets, being cast with the same. Aside from this the machine contains the latest features of the Whitcomb planer, the machine being of the company's standard design.

Commissioner Du Brul of the National Metal Trades Association spent two days in Milwaukee, immediately following the opening of the strike of machinists at Chicago, directing the work of hiring machinists to take the places of the strikers. While there he had the cooperation of the Milwaukee office of the Metal Trades Association and was successful in getting a number of men to join the force of strike breakers. Although but 85 miles from Chicago, the Milwaukee machinists are not of the striking type. When the general strike order of the machinists was issued two years ago it proved very ineffective in Milwaukee and had little effect on the operation of the various plants located there.

Boiler makers employed by the Illinois Central Railroad Company struck June 7 for an increase in wages from 34 and 36 cents an hour to 42½ and 44 cents an hour. Their agreement, which expired June 1 of this year, specifically stipulated that no strikes should be declared without giving the company 30 days' notice. This clause of the contract was violated, as no notice was given. The strike was declared by local unions of the craft, and the national president has signified to the Illinois Central Railroad Company that not only was the strike unauthorized by national officials, but it has not their sympathy. About 300 men are out, and the company are making no attempt to operate their shops, as they are satisfied to cut down operating expenses for the time being.

The American Foundrymen's Association.

Ninth Annual Convention, Indianapolis, June 7 to 9, 1904.

(*Concluding Report.*)

The telegraphic report published in last week's issue covered the sessions of Tuesday, June 7. Following is a complete report of the sessions of the remaining two days of the convention. It was at first intended to hold a final session on the World's Fair grounds in St. Louis, but lack of co-operation on the part of foundrymen of that city defeated this plan. However, nearly half of the members attending the Indianapolis convention went to St. Louis immediately thereafter.

WEDNESDAY MORNING SESSION.

By previous arrangement the recommendations of the association to the American Society for Testing Materials on pig iron inspection and rebates were made the first order of business. H. E. Field proposed two changes in the proposed standard specifications. The recommendations called for the purchase of all pig iron on the basis of analysis instead of fracture, and in order to make this analysis the original proposition was to select one pig at random from each 2 tons of each carload for purposes of analysis and to accept or reject the car on the result of such analysis. Mr. Field took the position that this would involve very great labor on the part of large users of pig iron and his amendment to select one pig from each 4 tons of each carload was carried. The original clause on allowance and penalties read as follows:

In all contracts, in the absence of a definite understanding to the contrary, a variation of 10 per cent. of silicon, either way, and of 0.01 in sulphur above the standard, is allowed. A deficiency of over 10 per cent. in the silicon, up to 20 per cent., and a further increase in sulphur up to 0.01 over the above allowance, subjects the shipment to a penalty of 1 per cent. in the price for each element so affected.

Mr. Field recommended that the penalty be increased to 4 per cent., which would be more nearly in line with the difference in value of the grades in question.

Mr. Loudenbeck contended that the wording of the clause compelled the buyer to accept the off grade car at the reduced price named whether he wished it or not, and suggested that the buyer should be given the option of either buying the car or rejecting it.

The proposition was discussed by Messrs. MacPherran, Slocum, Barbier, Magee, Barr, William and others, and the clause was amended to read as follows:

In all contracts, in the absence of a definite understanding to the contrary, a variation of 10 per cent. of silicon either way, and of 0.01 in sulphur above the standard, is allowed. A deficiency of over 10 per cent. in the silicon, up to 20 per cent., and a further increase in sulphur up to 0.01 over the above allowance, gives the buyer the option of rejecting the shipment or paying for same at a penalty of 4 per cent. in the price for each element so affected.

These recommendations of the association will be presented to the Testing Association by Dr. Moldenke and others who are members of both bodies.

Foundry Foremen's Section.

At this juncture the meeting was turned over to the Foundry Foremen's Section, Chas. H. Thomas, Newark, N. J., taking the chair, and J. A. Murphy occupying the station as secretary. Mr. Thomas delivered a brief opening address, in which he told of the increase of membership of the Foundry Foremen's Section from 100 to 200 during the last year, and spoke of the benefits which were accruing to every member of the section, and expressed the opinion that the association would year by year increase its power and usefulness in developing the highest efficiency of the modern foundry. He paid a high tribute to Dr. Moldenke, and the large place he was filling in the labor of raising the standard of foundry methods and practice, and predicted a bright future for both the Foremen's Association and the larger body with which it is affiliated.

David Spence, Chicago, read a brief paper on

"The Need of Modern Foundries,"

in which he said in part:

"One of the crying needs of the foundry industry today is up to date shops, and the firm who purpose building a plant can do no better than to call into consultation a first-class foundry superintendent while the plans for building are being drawn. The building should be high enough to secure good ventilation and ample light. A good crane should be provided, and also a track running through the foundry provided with turn tables at either end, and in front of the cupola the track extending into the yard, so that large flasks may be loaded and run to place with but little help, instead of calling off a dozen men from their work to handle them. The shop should have a good cupola stage, giving sufficient room to hold at least three heats of fuel and iron. The majority of foundries to-day are crippled because of inadequate platform space at their cupolas. Of importance also are ample space for core room and liberal shelf room for stock cores, with plenty of space for mixing the sand. Modern conveniences in the core room, as well as other parts of the plant, will contribute largely to the successful operation of the industry, the content of the workmen and the production of the best castings at the lowest cost. The need for up to date foundries is fully as great as the need for good sand, facings, iron and tools, to produce good results, and when we have the good foundry and good materials, the last need of all is good men who take an interest in their work. I believe that the worst enemy to the foundry trade is an ignorant foundryman with a poorly equipped shop, because it is plants like these that completely demoralize the market. It is my hope that the time is not far distant when we may have a uniform scale for figuring foundry costs."

A. T. William of Philadelphia, in the discussion which followed, expressed the belief that modern men were needed quite as much as modern foundries, men who would not condemn a new article or tool before they had tried it. He told his experience during 18 years with the Enterprise Mfg. Company's foundry at Philadelphia, and their efforts to develop the pride and personal efficiency of their individual workmen. He asked the members of the association on behalf of their men to see to it that every foundry had some clean corner where the men could wash and dress themselves after their day's work, so that they could go onto the streets without loss of personal dignity.

David Reid, Columbus, Ohio, read a paper on

"Specifications and What They Mean to the Foundryman."

In our trade, said he, the rule of thumb method is gradually giving way to definite estimates and specifications. The average foundryman makes his first and greatest mistake when he is careless in studying specifications before bidding on a contract, and is forced to devote hours and days in scheming how to cut the cost so that the job may be secured and yet be profitable. If the terms of the specifications define the material as cast iron No. 1 with a tensile strength of 23,000 pounds per square inch; or No. 2, to be high grade cast iron or gun iron, to be made of charcoal metal, in the air furnace, or other process giving a product with a tensile strength of not less than 28,000 pounds per square inch, with an elongation of 0.25 per cent. before rupture, while under strain, he often passes them from his mind with the feeling that good commercial work will cover this all right, takes the contract, only to have his eyes opened and his credit and bank account impaired on account of his inability to carry out the specifications as agreed. Such specifications are being constantly drawn up, not for the purpose only of getting good commercial products, but to obtain something far superior to every day castings.

The Ordnance Department recently specified No. 2 cast iron to contain silicon, 1.25 to 1.35; sulphur, not over 0.12; phosphorus, not over 0.45; managanese, 0.65 to 0.75. The tensile strength was to be 30,000 to 35,000 pounds per square inch, and elongation before rupture 0.25 per cent.

To the credit of the American Foundrymen's Association and the Cast Iron Committee of the American Society for Testing Materials, be it said that we were in position to carry out such severe specifications, for their

investigations have enabled us to specify, in turn, our pig irons in such a way that the furnaces could furnish just what was wanted.

"While heartily in favor of and preferring to work to specifications, the writer believes that the foundry industry has not yet reached the point where engineers can give full sway to their knowledge and imagination, too often the latter, in drawing up specifications for castings. The efforts of the American Society for Testing Materials, of which this association is a component part, to make their specifications for pig iron, cast iron and a variety of classes of finished castings the standard for the whole world, is therefore to be commended and should have the full support of every member of our association."

Benjamin D. Fuller, Allegheny, Pa., read a paper on

"The Core Bench"

in which he urged that members of the association make a painstaking study of the sands and mixtures with the view to determining which combination is best suited to each given class of work. For small, light lettered box castings he advised the mixture of fine bench molders' sand and molasses water to be used within 24 hours after making, and the core to be guarded against dampness. This material, he held, could be used over and over by the addition of a little new sand each day. For certain lines of light and medium castings he advised a core made of ground resin and fine sharp sand, a combination that has the merit of being quickly dried and therefore serviceable in hurried work. It cannot be handled hot. Where a smooth, small hole is desired through a body of iron, molding sand and oil seems to be the thing, but where the core is light and of considerable length a difficulty in using this mixture is that it will shrink and warp. While this can be overcome to some extent, it has its drawbacks in making cores of certain shapes. The oil and sharp sand core is an excellent one where strength is desired, also a core which will vent readily, and can be rapped from the casting easily. For cylinders, jackets, ports, radiator and similar castings this is good.

"Where any considerable number of cores are to be made which present an uneven surface to be turned out upon the plate, it is wise to construct a pattern and cast dryers rather than to use a frame and bed in loose sand, as is often done.

"Likewise in making large work much time and worry are saved by shaping an arbor pattern and casting a sufficient supply rather than hunting up rods of different sizes and shapes, bending and straightening and fussing over them, and frequently turning out a worthless core at that. Money is well spent in the purchase of good sifters, anvils and rod straightening and cutting devices, also in having a man straighten out and assort rods and hooks, arrange plates and attend to work of this character.

"As is well known, sand that has been properly mixed and tempered is much more likely to produce good work than sand which has not been so treated. But as an illustration let me cite a case from experience: Cores for large work were being made from a mixture of compound and sand at a ratio of 1 part compound to 22 parts sand, mixed by hand. After installing a power machine which mixed and tempered the batch thoroughly, better results were obtained from a mixture of the same sand and compound at a ratio of 1 of compound to 40 of sand. This seemed a reasonably cheap mixture, but by using different materials we are now able to produce 60 parts for the same cost as 23 parts first mentioned.

"The foreman coremaker should be a man capable of at once deciding how and of what mixture a core should be made, who is to make it, &c. Time records should be kept. A record of boxes in and out of order is also essential, so that any desired box may be located quickly.

"As essentials let me also mention good ovens, cranes, handy water attachments, steam jets leading into bosh for mixing of materials, such as core compounds and blacking, &c. Over all vigilance eternal as well as rectitude of conduct in dealing with employees, and good results can be obtained."

President Thomas read a paper on

"The Foundry Apprentice"

as seen in one shop, in which he told of the difficulty of securing apprentices who would be willing to work at wages anything like commensurate with their services, because the boys of to-day have false ideas of the value of money and are unwilling to enter into any calling that forces them to get their hands dirty. But the most serious phase of the problem was not the immediate difficulty of securing boys, but the larger problem of providing skilled molders in the near future. Already, said he, there is a scarcity of good molders, except in times of depression, and so few boys are being educated to the trade that the problem of securing good molders grows worse with the years. The speaker told of the method he used in educating and encouraging to a thorough and painstaking study of the trade. Said he:

"I tell the boy what facing to use, where to set his sprues and risers, if any; how to cut his gates; and then leave him alone until he gets stuck and asks for aid. Then I take him all through the part of the work he has done right, up to the point where his difficulty commenced, make several suggestions as to the different ways in which the job can be secured, and ask him which would seem to him to be the quickest and best. If he does not select the best way, I suggest it to him. If there are more than one off the pattern, and there are several ways to do the job, I advise him to try each a different way, and let me know the result. When he makes his report he has had time to think, and generally has selected the easiest way suggested. With a smile, he says that it seems twice as easy when he knows how, and that he can make the next one in very much less time, invariably doing so, if not interfered with by the molders.

"I praise his castings when they are turned out clean and sound, and when a bad one is made the boy and I hold a post-mortem examination on it, decide upon the fault, and look for the remedy. These are things the boy will never forget. In this way I try to have the good and bad results leave a permanent impression.

"As the boy advances we give him a chance to make extra time, and it is surprising to note the special energy an hour or two a day put in by the boy when a job is given him which will keep his mind occupied and hustling. We make it a practice of paying our men for what they do in the way of good work. We never allow a boy to close a poorly finished mold. He must learn to make a neat, clean mold before he can attain speed. He is told that a neat, clean workman can always be picked out by his personal appearance and the condition of his floor and tools.

"Just as soon as the boy begins to show an improvement we start him ahead by giving him better and better work, not forgetting the little raise from time to time with the extra accompanying it, the idea being to keep the boy satisfied. It is surprising to see how they will vie with each other to get out the best job in the shortest time. This may sound like a fairy tale, but can be readily verified by personal inspection any day.

"Now for the very important matter of the apprentice ratio. The molders' union allows one for the shop and one for every eight molders—in other words, that which was good enough 40 years ago, but is obsolete now. The foundrymen are wanting one to six, but this, like other modern ideas, the molders will not give. Nevertheless, it is a question for concerted action by both parties, and the nearer the apprentice ratio is brought to one to five the better, even if the apprentice be adjudged proficient in one or more branches of the trade only. If the ratio is not increased, and the trade itself made more attractive to the young man, the scarcity of good molders will soon become a calamity.

"The apprentice should be given the best work in the shop as soon as he shows that he is able to tackle it. We contract to teach the boy a trade. If he is bright, push him along. If he is dull, drop him, as he will only become another candidate for the minimum wage. What we want is maximum days' work, with maximum days' pay, and none of the other. Only then will the laborer be worthy of his hire."

This paper created considerable discussion, some members, among them A. M. Loudon, taking the stand that

the gently pursuasive method used by C. H. Thomas would not work with the character of boys that are available in some localities, where paying a boy a cent more than he was worth only spoiled him.

A. T. William, Philadelphia, contended that the employer was himself to blame that apprentices themselves were not developed into well rounded molders because when an employer found it profitable to put him on one class of work he would keep him there month after month, and the boy himself, because of the opportunity to make more money on the piece basis, would not ask for more varied work.

J. A. Murphy told of the establishment in Erie, Pa., of a night school operated at the expense of the foundries and stated the improvement in the young men was magical.

R. F. Barker observed that there seemed to be a good supply of dry sand molders, but very few green sand molders, and that the molding machine was gradually taking the place of the skilled molders. He stated that in his shop any apprentice had the right to appeal to the foreman for a change in work, and, if necessary, to appeal from the foreman to the management itself. He told of three of his boys who were taking courses in one of the correspondence schools, with the result that they were now able to handle the most difficult work. He believed that it was the foreman's own fault if his apprentices did not develop into skilled molders.

Insuring Patterns.

The report of the Committee on Insurance of Patterns, of which F. Conlin, South Bethlehem, Pa., was chairman, was briefly referred to in last week's issue. It was stated in the convention that in case of a foundry fire more difficulty was involved in securing equitable allowances on the part of the insurance companies than on any other part of the plant, and that this is due to the fact that fire underwriters in the past were imposed upon by owners of patterns who sought to get first cost out of them. The system devised by the committee as a result of conferences with the National Board of Underwriters includes the following recommendations:

1. The value of a pattern for record purposes shall be the actual first cost to the owner, to which repair costs may not be added unless they increase the intrinsic value of the pattern.

2 and 3. Insurance valuation on patterns to be fixed on the basis of the annual depreciation from the first cost as recorded, amounting to 10 per cent. per annum on wooden patterns and 5 per cent. on metal patterns, with a proviso that depreciation value on metal patterns cannot go below scrap value of materials.

4. Depreciation shall date from the last time the pattern went to the foundry to make a casting therefrom, provided that it was in proper condition for work at that time. Active patterns therefore retain their full value and others are restored to the active class each time they are used. Patterns which have become obsolete in the course of time are dead when ten years have elapsed, in the case of wooden patterns.

5. Customers' patterns are not subject to depreciation, as the foundryman is under obligation for full payment to his customer for the full cost of the pattern. The value must be ascertained by the foundryman and noted on the record card when the pattern is received.

6. Accurate records must be kept which are always open to inspection by insurance representatives, card records being recommended because they can be kept free from obsolete matter and may be locked up in a fire proof safe over night.

7. A pattern clause based upon the standards adopted by the American Foundrymen's Association and approved by the National Board of Underwriters is to be attached to foundry insurance policies, and the 10 per cent. clause limiting insurance on patterns in ordinary insurance policies be abrogated with such foundries as conform to the requirements named.

WEDNESDAY AFTERNOON SESSION OMITTED.

The programme called for a session Wednesday afternoon to be devoted especially to the pattern shop, but the local Reception Committee by the skillful use of a brass band diverted the interests of the members to a trolley ride and a visit to the plants of the Chandler & Taylor Company, the American Foundry Company and to the Brown-Ketcham Iron Works.

At the foundry of Chandler & Taylor Company the visitors were particularly interested in the charging device for cupolas and the arrangement of the charging floor. The floor was so arranged that trucks or buggies sufficient to hold the entire charge could be placed on the floor at one time and any one truck brought to the transfer table without interference. An exhibition was also given by the Philadelphia Pneumatic Tool Company of the Keller pneumatic sand rammer ramming the subbase of an engine frame. The guests were led through the foundry and given any information required by J. W. Sturgeon, the foreman, who is a member of the Foundry Foremen's Section.

At the American Foundry Company's plant the visitors were shown methods of handling small light castings in large numbers, the work being done largely in a variety of molding machines.

At the Brown-Ketcham Iron Works the visitors arrived just at the time a heat was poured, the molds most interesting to the visitors being for long cast columns and other structural sections.

Election of Officers.

At a business session in a smaller hall just previous to the smoker in the evening the following officers were named for the ensuing year:

President, C. J. Wolff, L. Wolff Mfg. Company, Chicago.

Secretary-Treasurer, Dr. Richard Moldenke, Watchung, N. J.

Vice-presidents by districts:

First District, New England States: E. W. Anthony, Smith & Anthony Company, Boston, Mass., to succeed John Magee, Chelsea, Mass.

Second District, New York and New Jersey: John Mills, Abendroth Bros., Port Chester, N. Y., to succeed A. J. Beckett of Hoosac Falls, N. Y.

Third District, Pennsylvania, Delaware, Maryland and District of Columbia: D. J. Thomas, Starritt & Thomas Company, Pittsburgh, to succeed John McClaren, Pittsburgh.

Fourth District, Michigan, Ohio, Kentucky and Tennessee: A. K. Beckwith, Estate of P. D. Beckwith, Dowagiac, Mich., to succeed himself.

Fifth District, Indiana, Illinois, Missouri and westward to the coast: H. C. Diller, Western Electric Company, Chicago, to succeed C. J. Wolff, Chicago.

Sixth District, Wisconsin, Minnesota and westward to the coast: T. J. Sherriffs, Sherriffs Mfg. Company, Milwaukee, Wis., to succeed Adam W. Baer, Milwaukee.

Seventh District, Southern States: J. P. Golden, Golden's Foundry & Machine Company, Columbus, Ga., to succeed himself.

Eighth District, Canada: T. J. Best, Warden, King & Son, Montreal, to succeed himself.

The office of assistant secretary was abolished.

The retiring president, Willis Brown, Erie, Pa., was made an honorary member of the association.

Smoker Wednesday Evening.

The convention hall was transformed into a vaudeville show Wednesday evening, the hosts being the Commercial Club of Indianapolis and the Indianapolis Foundry Foremen's Association. Lewis Hoover, secretary of the Commercial Club, announced the numbers on the programme. Ex-Mayor Bookwalter made an address of welcome, in which he used a large number of foundrymen's terms to the amusement of the audience. After the vaudeville programme Dr. J. S. Holmes, chief of mining and metallurgy at the World's Fair, St. Louis, made an address, in which he urged the members to visit the fair, giving them an especial invitation to make a study of the mines and metallurgical department, promising that he and his assistants would volunteer their services as guides through the building and thence to other parts of the fair. He called especial attention to the foundry exhibit, or model foundry, which had been abandoned one time for lack of support, but which had been revived and was now being pushed to completion, and also to a working exhibit consisting of a cement casting plant. But the most important part of his address was a brief description of the coke testing plant which was being installed, and the statement that during the progress of the exposition coking qualities of all coals of the United States would be tested. These tests would be conducted under the joint supervision of officials from the United States Government, from the exposition itself and from a committee of the American Foundrymen's Association which he asked be appointed for that purpose. This in-

vitation on the part of the exposition was accepted in the Thursday morning session by the following resolution and a committee was appointed, to consist of Dr. Moldenke, H. E. Field and one other who would be announced later, it being the intention of the association to choose for the third some recognized coal expert:

Resolved, That the American Foundrymen's Association commends the action of the World's Fair authorities at St. Louis in arranging for a special foundry building and foundry exhibits; and also for carrying on in connection with these exhibits a series of coking and other tests of value to the foundry industry. That the association urges the foundrymen of the country to aid this important undertaking in every way practicable. That the association appoints a committee of three to co-operate with the World's Fair Department of Mines and Metallurgy in planning the tests to be made in the exposition foundry and Government coke plant.

THURSDAY MORNING'S SESSION.

The fact that the afternoon session of the day previous had been prevented by the over-zealousness of local interests made the convention of Thursday morning a rapid fire session, in which much was done, but much necessarily omitted.

H. E. Field, secretary of the Metallurgical Section, called the meeting to order.

R. S. MacPherran of the Allis-Chalmers Company, Milwaukee, read a a paper on "Standard Methods of Analysis," which was followed by a discussion, in which it was decided by the association that sulphur is the most important item to standardize, and that if standard methods could be adopted for sulphur the analysis would be easy for other materials.

The paper of J. J. Porter of Pittsburgh on "Examples of Irregular Distribution of Sulphur in Pig Iron," was read by title, and members were asked to discuss this paper during the year in writing, sending their communications to the secretary.

H. E. Field gave a talk on the "Effect of Manganese on Cast Iron," which resulted in a discussion which was necessarily curtailed for lack of time. In the discussion Mr. Field stated that his experience had been that manganese was an advantage as a constitutent of pig iron up to eight times the sulphur constituent, but that excess in manganese above that ratio was of little value.

The paper on "Scrap Iron" by W. G. Scott of Racine was read by title.

R. F. Flintermann of the International Harvester Company, Chicago, gave an address on "Loss in Malleable Iron Practice."

H. C. Loudenbeck, Pittsburgh, Pa., read a paper on the "Value of Chemist and Metallurgist in Manufacturing Plants."

J. D. Wilson, Detroit, Mich., read a paper on the "Value of Chemistry in the Foundry from a Foreman's Standpoint," and he gave many illustrations to show the saving in time and money effected in his plant by the careful analysis of materials, as compared with the year previous to the employment of a chemist.

In the discussion which followed, Mr. Wilson said that his firm had had no difficulty in making satisfactory contracts with iron producers in which were given definite allowances or rebates where sulphur exceeded or silicon fell short of certain stated limits.

A. M. Thompson of the Link Belt Machinery Company, Chicago, Milton J. Moore of the Illinois Steel Company, Joliet, Ill., H. E. Diller of the Western Electric Company, Chicago, and others discussed their experience as to the percentage of sulphur in coke which found its way into iron, the consensus of opinion being that it varied from 4 to 5 per cent. Mr. Field stated it as his conclusion that there were two sulphur ingredients in coke, one of which was volatilized and the other remained in the ash, and that the percentage of sulphur which was transferred from the coke to the iron was in each case the same as the sulphur that remained in the ash during a burning test.

Arch. M. Loudon, Port Chester, N. Y., presented a paper entitled "Memoranda on the Metallurgy of Cast Iron." This was read by title only. This paper states that in order to make the proper mixture of iron for any given use both physical and chemical tests are essential. The paper discusses the effects of silicon, sulphur, phosphorus and manganese in detail, following with the average analysis given below for obtaining best results on the different classes of castings named:

Chilled Castings.

	Light chill.	Solid white.
Silicon, from	1.50	to 0.50
Sulphur, from	0.02	to 0.09
Phosphorus, from	1.50	to 0.50
Manganese, from	1.50	to 0.50

Large Engine Castings.

	Per cent.
Silicon	2.00
Sulphur	0.05
Phosphorus	0.50
Manganese	0.45
Total carbon	3.50

This would allow No. 3 foundry iron to be used and a large percentage of scrap with a soft iron introduced to get the above average analysis.

Light Machinery Castings.

	Per cent.
Silicon	2.25
Sulphur	0.05
Phosphorus	0.65
Manganese	0.50
Total carbon	3.50 to 3.75

To secure this No. 2 plain iron is used with 50 per cent. scrap.

Stove Plate and Very Small Light Castings.

	Per cent.
Silicon	2.75
Sulphur	0.04
Phosphorus	0.75
Manganese	0.40
Total carbon	3.75 to 4.00

H. E. Diller of the Western Electric Company, Chicago, read a paper on

"Hard Iron"

of which the following are extracts:

"A casting which it was impossible to plane was sent up to the laboratory for test. Several tools had been tried on it, and all that was accomplished at the hard spot was to take off a little of the skin and leave a bright steel colored surface. This could not be drilled, but by drilling from the other side the drill went right through this polished surface without the least difficulty. The analysis of the iron at the hard spot showed a little over 0.20 sulphur, and the combined carbon was below 0.50 per cent.

"Graphitic carbon increases the softness of iron by breaking the continuity and forming planes of cleavage. It also acts as a lubricant when the iron is drilled. But more important than the direct effect of these different elements on the iron is their tendency to increase or decrease the percentage of combined carbon formed. Except when the total carbon is abnormally low, or the sulphur abnormally high, more can be told of the hardness of iron by the combined carbon present than from any other indication.

"In a series of every day working tests for combined carbon it was found that putting high phosphorus irons in the mixture made it necessary to raise the silicon about 0.20 per cent. in order to get the same percentage of combined carbon in the castings. With high phosphorus irons, all other things being equal, a complaint of hard iron seemed to come quicker. Hence the advantages of the fluidity due to these classes of irons were deliberately sacrificed and lower phosphorus irons used.

"For foundries making a variety of small castings requiring extreme softness, a good test is to make a small flat casting, of about the thickness of the smallest work, and regulate the mixture each day according to the amount of combined carbon found in these test pieces. In making such tests a curious circumstance was noticed. Two pieces 4 inches square, one ⅛ inch and the other ¼ inch thick, were cast. Invariably the lighter piece had the lower combined carbon, the average combined carbon of 60 samples being 0.14 in the ⅛-inch piece and 0.20 in the ¼-inch sample.

"The plan of judging the work to a large extent by the combined carbon in it can be used to great advantage in heavier castings. The sulphur and the manganese should be watched also, but with the required amount of combined carbon secured there seems to be no necessity for putting a low or high limit to the silicon.

"If we knew the amount of each element in the iron, and its exact effect on combined carbon, as well as the

way the iron had to be treated on its way from the cupola to the cold casting, there would be little use for determining the combined carbon. But under usual conditions it seems a good way of summing up the effect of a great many variables."

The discussion of this paper brought out many interesting facts about the influence of different elements in pig iron. The effect of phosphorus in hardening iron was especially discussed, but it was decided that more information was necessary before a definite determination could be reached.

"Pig Iron and Its Constituent Elements,"

by H. L. Williams, Chicago, Ill., was read by Mr. Field, and close attention was paid to it by both foundrymen and men interested in the sale of iron. A condensation of the paper follows:

"We find pig iron and castings made up in the main of metallic iron, carbon, silicon, sulphur, phosphorus and manganese; the other elements, such as titanium, copper, arsenic, &c., seldom being important enough to cause trouble.

"Metallic iron runs 92 to 94 per cent. in our foundry and mill irons. It is the same whether in pig iron, steel, wrought iron, castings, &c. Were it alone to be considered we need not worry about grading by fracture or analysis. We must look for the differences that occur in the various classes of irons, in the additional elements present. To control these foreign elements is the task of the founder.

"Carbon is most important in cast iron. Its effect on iron is positive and varied. Free carbon, or graphite, may be either in the pig iron between the crystals or, if in considerable excess, leave the iron at the moment of set and fly off as "kish." Combined carbon, or the carbon which remains in combination with the iron, is the hardening substance in iron, and when all the carbon is present in that state leaves it perfectly white. This is turned to practical account in making chilled castings, the effect of a sudden cooling of iron by throwing into water or casting against a heavy body of cold iron promoting the retention of the carbon in the combined state. In this way car wheels, crusher work, rolls and the like are made, with iron otherwise gray if left to cool slowly. If a casting is too hard a correction must be sought in freeing more of the carbon and getting it into the graphitic state in subsequent castings. Hence softness and hardness of iron in foundry work is chiefly controlled by carbon.

"Silicon in iron frees the carbon, depending upon the amount present, the shape and weight of the casting and the pouring temperature. In other words, the rate of cooling. If the iron is high in combined carbon and hard, add silicon to soften it. It will do this unless prevented by too much sulphur, phosphorus or manganese. If the iron is too soft, reduce the silicon. If the iron is too hard and low in total carbon, too much silicon is not good, as it is only effective through its action on carbon.

"More silicon is required in thin castings than in heavy ones, as the latter cool slower and give the carbon time to separate out, while the former, cooling quickly, chill more and keep the carbon in combination.

"Manganese increases the affinity of iron for carbon. In heavy castings it is well to have 0.80 per cent. and in light work only 0.50. With these proportions the metal will be clean and strong. Below 0.50 the metal is inclined to sponginess and above 0.80 there is a chance for hard iron. Manganese also reduces the sulphur present. In chilling work high manganese gives a strong, hard, sharp chill. It can be used up to 3 per cent. in such mixtures.

"Phosphorus increases fluidity, corrects shrinkage, and is desirable in the foundry up to 0.50 for ordinary foundry castings and up to 1.25 for ornamental products. Phosphorus hardens iron, and very much of it requires plenty of silicon to neutralize the effect. Excessive phosphorus with low silicon makes bad foundry work.

"Sulphur combines carbon erratically, causing hardness, closing the grain and weakening the castings. In ordinary castings it should not exceed 0.09, but may go above this in common work requiring no machining. It is the great enemy of iron and should be kept out as much as possible. The fuel is a fruitful source of sulphur, hence this should be watched.

"It will be noticed that silicon opens the grain of iron by freeing the carbon, while all the other elements close it by retaining the carbon in combination. In these effects we find the relation of grading by fracture and chemical analysis."

A paper by W. S. Morehouse of New York was devoted to "Moisture in Molding Sand," and gave the results of an informal circular which had been sent out by its writer to a large number of foundrymen, asking their experience as to the proportion of water which they were buying at sand prices. The aim of the paper was to draw out a discussion in order to arrive at a definite percentage of moisture beyond which the sand would be rejected or subjected to a penalty, but there was no opportunity for discussion.

A Correction.

The paragraph published in last week's issue devoted to the report of Mr. Field, secretary of the Metallurgical Section, was erroneous in stating that an alternative was suggested that the Metallurgical Section might ally itself with the Foundry Foremen's Section in order to secure larger membership because of lower dues. The paragraph should have stated that a suggestion was made that the association follow the example of the Foundry Foremen's Section in having a separate organization affiliated with the American Foundrymen's Association, but having lower dues. The Metallurgical Section, which was organized 18 months ago, thus far has drawn its membership exclusively from the American Foundrymen's Association, and indeed has been the means of bringing a number of additional members to that association, and no effort has been made to increase the membership outside.

Section Officers Elected.

R. S. MacPherran, Milwaukee, was selected chairman of the section, and H. E. Diller, Chicago, secretary.

The Standard Method Committee for Analyzing Iron was increased to 12 members by the addition of H. E. Diller, R. S. MacPherran, R. F. Flintermann and H. C. Loudenbeck.

Foundry Foremen's Section.

While the Metallurgical Section was being held in the main hall the foundry foremen met in a smaller hall and discussed business topics, particularly in connection with the purpose of organizing new local foremen's organizations throughout the country. The following officers were elected:

President, C. H. Thomas, Newark, N. J., to succeed himself.

First Vice-President, David Reid, Columbus, Ohio.

Secretary, F. C. Everitt, J. L. Mott Iron Works, New York, to succeed J. A. Murphy, Cincinnati.

Treasurer, J. A. Murphy, Lane & Bodley Company, Cincinnati, Ohio.

District Vice-Presidents: Pennsylvania, W. G. Gruneau, Erie Engine Works, Erie, Pa.; New York, S. M. Williams, A. & F. Brown, Elizabethport, N. J.; Ohio, W. H. Holmes, American Foundry Company, Indianapolis, Ind.; Wisconsin, T. Glasscock, Pawling & Harnischfeger, Milwaukee, Wis.; Illinois, David Spence, Greenlee Foundry Company, Chicago.

A memorial to the late Henry Hansen, the founder of the Foundry Foremen's Association, and at one time editor of *The Foundry*, was ordered and a committee appointed to draw it up. It was also decided that the members should create a fund to be given as a testimonial to the widow of their former president.

GENERAL SESSION.

About 11 o'clock the Metallurgical Section gave way to the general session, with the newly elected president, C. J. Wolff, in the chair.

John Magee of the Magee Furnace Company, Chelsea, Mass., read a paper on "The Successful Piece Price System," which was earnestly discussed and which led to the suggestion that a section of the association be created, to be known as the Accounting Section, which should make its special business the study of shop systems and

standardization of piece prices. Mr. Magee spoke of the difficulties attending the piece price system in a foundry because of the bewildering details, as it is not uncommon to find 5000 patterns regularly used in a general foundry. It was necessary, he said, to have a basis price which was forever beyond dispute and from which there was no appeal, secured by the contract in duplicate, giving the molding price of each casting made, one copy of each contract to be signed by the foreman and one by the price committee of the molders' union. Each molder in his shop is assigned a number and given three stamps bearing that number, with which he marks the cope of each mold. All castings pass through an inspector's hands for preliminary inspection, but every man in the employ of the company is a committee of one to inspect everything that comes under his eyes. Rejected castings are sent to the foundry and piled up on the "dead heap," where they are easily accessible, each workman having an opportunity to examine the pile, and if he finds that castings are charged to his number erroneously he can have the error corrected. Each workman himself, therefore, knows exactly how much will be deducted from his pay envelope at the end of the week for rejected work.

W. H. Parry, Brooklyn, N. Y., read an interesting paper on

"Pattern Making and Its Relation to Foundry Cost."

At the close of the discussion which followed the paper Dr. Moldenke moved that a Pattern Making Section be organized and Mr. Parry be made its secretary. The summary of Mr. Parry's paper follows:

"When we consider that a molder is compelled to make castings with practically no means to a successful end than a box or two plus a pile of sand, it is wonderful indeed in these days of keen competition that castings can be made commercially profitable. The all too common practice of sending an order for hundreds of castings from one small pattern to be delivered in a day or two is still with us. The loam molder who is fortunate enough to be provided with all the loose pieces necessary to complete his mold is in luck, and how often does it occur that when the loose pieces are furnished, they do not come within a reasonable distance from his sweeps, or project inward or outward enough to necessitate amputation.

"Another fruitful method of increasing foundry costs in connection with loam work is the growing disinclination to make the necessary core boxes, so shaped as to perfectly match the main loam core. The excuse is advanced that there are chippers employed in the foundry for this work. This procedure is the rankest kind of heresy and not fair to the foundryman or the molder who is making his best efforts to cheapen the cost of castings.

"Unvarnished patterns with glue joints improperly made, or with daubs and beads of glue sticking out, especially in corners where the lift is greatest, are to be condemned. The use of cheap varnish is to be deprecated for all patterns, the more so on the larger ones that are apt to be left in the sand over night. It entails extra work on the molder in mending the mold, due to the glue oozing through the fresh varnish.

"The making of large patterns in sections so that each part can be drawn from the sand independent of its neighbor is very often a great help to the sand artist, and if it is possible to do away with deep cope lifts through the medium of suspended cores in the cope, so much the better for the foundry and pattern shop, in many instances.

"Again, large or small patterns that are slapped together any old way by men who know better than to expect a pattern to be drawn from the sand without any draft is very bad practice. It has been my 'privilege' many a time to have witnessed good molders attempting to make presentable castings from such patterns, only to have them returned as not being 'true to pattern.' One case in particular may be mentioned. A cement mill hopper frame some 13 feet in length, by a width and depth of some 6 feet or so, was constructed with so little regard to the molder's feelings that casting after casting was lost, until, through the insistent demand of the foundry boss, a few inexpensive core boxes were made, which allowed the piece to be cast successfully and with less trouble and expense.

"The placing of fillets on core prints, where they join the pattern, to avoid a 'crush' is good practice, and should be universally adopted, at least where cores of great bulk rest thereon. While it increases the chipper's work it decreases the chance for lost castings.

"On complicated core work time and castings can be saved by having the set of cores made strongly wired without any attention being paid to venting them, and sent to the pattern shop, or any other suitable place, to be assembled on core jigs of wood. Any error can thus be detected and core boxes or core prints corrected while the concrete evidence of errors is present. When the object of these trial sets is explained to the foundryman he will always be willing to provide them, as it lets him out of a lot of trouble."

Discontinuance of the Journal.

As indicated in the telegraphed report of last week, the association decided to abandon the publication of its monthly journal and to confine its efforts to pamphlets, reproducing papers and committee reports. The attempt to publish a regular trade paper, with the expense of endeavoring to secure advertising and the necessity of maintaining a force of experts acting as associate editors, proved to be greater than was warranted by the results. A deficit arising from the expense of the publication during the year will be met out of the current receipts of the Foundrymen's Association, and as soon as that deficit is covered a proposition will be made to decrease the annual dues, with a view to enlarging the membership of the association.

CONVENTION NOTES.

Throughout the convention the indefatigable activity and winning personality of Dr. Richard Moldenke were evident, and the members to a man expressed the indebtedness of the association to their secretary, whose energy and zeal in furthering the interests of the association are to be credited with no small measure of its success.

The time and place of next meeting will be decided by the Executive Committee. A plan of meeting at Louisville, Ky., and from there taking an excursion to the Birmingham iron fields was discussed favorably. Atlantic City, Philadelphia and Cleveland all tendered invitations.

A number of firms selling foundry supplies and machinery had headquarters and exhibits at the Claypool Hotel. In a showroom off the lobby the Falls Rivet & Machinery Company, Cuyahoga Falls, Ohio, exhibited the Wadsworth improved core machine, the exhibit being in charge of Edwin Seedhouse, manager, and George H. Wadsworth, superintendent. This machine has been only recently placed on the market to succeed one of an older type, also invented by Mr. Wadsworth. It was stated by Mr. Wadsworth that the improved machine could make a core 6 inches by 26 inches in 19 seconds. The machine makes 24 sizes of perfectly round cores from ⅝ inch to 6 inches in diameter; also square, hexagon and "D" cores, running in lengths up to 40 inches long and longer.

In the same room E. E. Hanna of the Hanna Engineerings Works, Chicago, exhibited the Hanna portable screen shaker in several varieties and sizes.

The S. Obermayer Company, represented by S. T. Johnston, W. M. Fitzpatrick, W. J. Adams and Justus Thorner, occupied a suite of rooms, where they entertained members and guests.

The Philadelphia Pneumatic Tool Company also had a reception room, and gave out as souvenirs a key ring and chain and a 10-year calendar.

Hickman, Williams & Co., Chicago, entertained hospitably in their quarters, and gave each of their guests a nickel plated envelope opener with celluloid handle.

The Garden City Sand Company, represented by William Chambers and Charles McNeal, showed samples of their sand and of the work done from it, and gave to visitors a leather bill book.

The J. D. Smith Foundry Supply Company, Cleve-

land, presented every member with a pin representing a cupola.

Henry E. Pridmore, Chicago, gave away expensive steel tapes in gun metal cases.

The J. S. McCormick Company, Pittsburgh, represented by J. S. McCormick, president, Thomas E. Malone, secretary, and William M. Wilson, gave a programme of the convention, bound in blue denim paper and containing half tone representations of group photographs of members attending conventions since the first meeting in 1896.

The Hay Foundry & Iron Works of Newark, N. J., presented each member with a tag which caused much amusement.

Standardizing Pig Iron and Coke.

The American Foundrymen's Association, working through an allied body, the American Society for Testing Materials, are engaged in formulating a standard classification for pig iron, gray and malleable iron castings and foundry coke.

The stress of exact requirements in finished iron and steel products, based on chemical analysis and severe physical tests, is proving the inadequacy of the time honored fracture classification of pig iron, and the first paragraph of the proposed classification of pig iron recommends that all iron shall be bought by analysis, rather than fracture. While penalties are demanded for sulphur above and silicon below a certain base analysis, corresponding rewards are provided for iron that is a certain percentage lower in sulphur or higher in silicon than this standard. This balancing of penalty and reward gives a double incentive to the blast furnace man to watch his heats with a view of securing the nearest possible approach to perfection, and the bonus paid for excellence will permit him to put better materials into his stack than at present.

At the present time No. 2 pig iron from different furnaces may represent so wide a range of ingredients as to make the classification almost meaningless. Foundry coke, similarly, means almost any coke whose structure makes it appear that it might have been in the oven 72 hours. Its sulphur may be so high as to make it useless for the purpose intended, or its ash so high as to make it expensive and burdensome; but it is still 72-hour foundry coke, and the buyer has no redress except to reject the shipment, a step that is usually undesirable because of the immediate need of the coke. The standards proposed for coke are on the same principle of punishing defects and rewarding excellence. The necessity of standardizing coke according to some definite chemical and physical tests is made all the more urgent just now by the appearance on the market of the by-product cokes, which, though unattractive in appearance, have the merit of extremely low sulphur and ash and high fixed carbon content.

Gray iron castings are classified into light, medium and heavy, and a standard of sulphur contents and tensile strength is fixed for each class. Malleable castings are limited to certain maximum sulphur and phosphorus contents, and must endure specified tests for tensile and transverse strength and for elongation, with other provisions for annealing and finish. The adoption of some standard for gray and malleable castings will do much to obviate the frequent disputes between maker and buyer, and will be a distinct advantage to both.

A design of direct connected electrically driven steel disk fan has just been perfected by the American Blower Company, Detroit, Mich. The motor is placed upon a substantial place, there being no bearings except those in the motor. The fan is connected to the motor by means of steel straps, which are bolted to the outer casings of both the motor and the fan. This, it is held, furnishes a very rigid form of construction, and at the same time obviates the disadvantages which are at times attributed to the former custom of attaching the motor to the arms of the disk fan.

National Metal Trades Association Notes.

CINCINNATI, OHIO, June 13, 1904.—The defense of the Chicago strike is in full blast. The National Association opened up an office with Secretary Wuest in charge, and every day consignments of men are received from various points. Full protection is furnished by the city and private police. No men are being boarded in the shops, but boarding houses have been secured in the immediate vicinity of each shop. Should any violence occur injunctions will be taken out immediately and rewards offered for conviction of violators of the law. It is believed that the shops will soon be fully supplied with first-class men. The association's certificate of recommendation which is given to workmen who have seen strike service, and carries with it preference in employment in all the shops of the National Association, is one of the best inducements that can be given to workmen to take strike jobs. Hundreds of these certificates have heretofore been issued, and the holders having steady employment tell their friends about it, with the result that many workmen in different parts of the country are applying for strike jobs in Chicago in order to earn the certificate. The following letter is typical:

——— ———, CALIF., June 1.

N. M. T. A., Cincinnati:

Gentlemen: Seeing by the newspapers here that you are "up against it" in Chicago, I am ready to come East and do all in my power to help you out. I worked there nine months during the Allis-Chalmers strike, running a burring mill. C. A. Luster of the Clyde Iron Works, Duluth, recommended me for your certificate, and the courtesy shown me by the members of the N. M. T. A. in Minneapolis this spring was enough for me to give you all the help I possibly can. I can get you several other first-class machinists here who wish to go back East, men whom you can depend upon under all circumstances. If transportation is too high to take them from here, I will pay one-half my own fare if you will stand good for the other half, and will report for work in Chicago.

(Signed) G. W. J., Certificate No. 1233.

On Monday official notification was received in this office announcing the appointment of a successor to Commissioner Du Brul. The new commissioner is W. P. Eagan, general manager of the Fred. W. Wolf Company, Chicago. Mr. Eagan is eminently qualified for the position, having been a member of the Administrative Council of the N. M. T. A. for three years. He was originally trained in the law and became connected with the F. W. Wolf Company in a legal capacity, later being promoted to the position of general manager of the company's business. He was one of the prime movers in the organization of the Chicago Metal Trades' Association after the dissolution of the old machinery manufacturers' association in that city. The offices will remain in Cincinnati, with Mr. Wuest in charge as secretary. The appointment is effective July 1.

The pattern makers' strike in St. Louis has been declared off by the union, such men as the employers requiring being taken back individually. The boiler makers' strike in that city is still on, but the shops are gradually filling up with nonunion men. The same is also true of the boilers makers' strike in New York.

President Andrew Carnegie of the Iron and Steel Institute thus alluded to the cosmopolitan membership of that body in his address at the annual dinner in London: "We have members from 19 different countries of the world. We have members in all parts of the world, speaking all the languages of the world, and nothing can happen in any of those countries in our industries that is not reported to us, so that we carry with us the efforts of the whole world, and we know just where we stand. In that position the Iron and Steel Institute is unique."

The Commercial Museum, which is now housed in the old Pennsylvania Railroad Building, in South Fourth street, below Walnut street, Philadelphia, will soon move to West Philadelphia. The buildings erected for the Export Exposition will become the permanent headquarters of the institution. The Pennsylvania Railroad Company will use the Fourth street buildings as an annex to their clerical department in Broad Street Station and for other purposes.

The Iron Age

New York, Thursday, June 16, 1904.

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.

The Value of a Trade-Mark.

The United States trade-mark is no longer a protection to trade within the country. Registration at Washington is of no value whatever in protecting a trade-mark excepting as it is used in foreign commerce. This rather startling condition of affairs is not generally known to manufacturers, even to those who own valuable trade-marks, yet a recent decision of the United States Supreme Court interpreting the existing statutes has overturned the most important portion of the national trade-mark laws by finding that "Obviously, the act is strictly limited to lawful commerce with foreign nations and with Indian tribes. . . . It [a trade-mark] can only be infringed when used in that commerce, without right, by another than its owner. The intent and object of the act forbid a construction that would bring local commerce within its scope." Reference was made to this decision in our Washington correspondence on May 26, but it is of such importance as to deserve further consideration.

There is a remedy, but it is a complicated one. In order to protect securely a trade-mark to be used in trade within the United States, it must be registered in every State and Territory of the Union. This done, the owner of a trade-mark will have the same protection as he has been having under the national trade-mark laws before the Supreme Court handed down their decision.

The act of Congress which is thus interpreted was passed in 1881. It may be that Congress will be able to pass an act that will be constitutional, and that will give the National Government the power to register trade-marks and protect them in domestic commerce. But this is doubtful, patent experts state, basing their belief upon the words of the Supreme Court uttered in another decision in 1870. The question of the power of Congress to control the use of trade-marks between States has never come before the Supreme Court, the present decision not going far enough to decide the full question, but in the decision of 1870 that body strongly hinted at its opinion on the subject in these words: "Whether a trade-mark bears such a relation to commerce in general terms (which would include commerce between States) as to bring it within Congressional control is one which we propose to leave undecided, because a due respect for a co-ordinate branch of the Government requires that we shall decide that it has transcended its powers only when that is so plain that we cannot avoid the duty. It is manifestly the dictate of wisdom and judicial propriety to decide no more than is necessary to the case in hand."

This is taken to mean that had the question of the power of Congress to control domestic trade-marks come before the Court the decision would have been that such control was unconstitutional. So it is considered that a constitutional amendment would be necessary to put the trade-mark registration on the same plane with patents and copyrights, and such an amendment seems very remote. Consequently owners of trade-marks must face the situation as it is, with little hope of a change in the existing conditions of the statutes. These conditions mean:

1. A national trade-mark is worthless excepting as it protects its owner in his trade with foreign countries, where treaty provisions with the United States give to residents of this country full trade-mark rights as provided under the laws of such foreign countries—that is, the same rights that a foreign country accords to its own citizen residents.

2. In order that a trade-mark be protected in the United States in commerce between States or within States, the trade-mark must be registered in each of the States and Territories. That is to say, if a trade-mark is to receive full protection it must be registered at Washington for its benefits in foreign countries, and in every State and Territory of the Union for its benefits at home.

The resident of a foreign country having treaty trade-mark agreements with the United States will be an equal sufferer with his American competitor under the new order of trade-mark protection. This has not been finally determined because the phase of the question has not come before the courts for a decision, but the experts in trade-mark law believe that in order that a foreigner may receive protection for his trade-mark in this country he, too, must register it in every State and Territory. In this the foreigner will have far greater trouble and expense in registering his trade-mark in America than the American will in securing his trade-mark in that foreigner's country. In Germany, for example, registration of an American trade-mark, after it has been registered at Washington, is fully accomplished at Berlin, while the German will have to make 50 and more registrations to accomplish the same thing in the United States. This is true in all such foreign countries. It has been suggested that an agreement might be reached between the States and the National Government by which the national registration would be accepted by all States, but the answer was once made in Congress that this could not be done "because no treaty can be made between the several States, or a State and a foreign nation."

The present status of the American manufacturer, or the foreign manufacturer doing business in the United States, is this: If he has not taken up the matter of State registration he is protected in all foreign countries where he has registered his trade-mark, but he is not protected in the United States excepting upon such goods as are intended for the foreign market or for trade with the Indians, which latter item is too small to be considered in a general discussion of the question. So far as its use in the domestic market is concerned, his trade-mark is absolutely unprotected. His competitor may use it at will, if he is inclined to employ such sharp practice. The competitor may even register it in his own name and compel the rightful owner to seek redress in the courts of each State where such registration has been made. It does not matter how old the trade-mark may be, or how long it has been registered at Washington. Under the new interpretation of the national statute the Government never had the right, under any existing law, to register a trade-mark for use in commerce between States.

Most of the States and Territories have stringent trade-mark laws, in which provision is made not only for registration, but also for punishment for infringement. Civil proceedings to recover damages for or to prevent infringement of trade-marks have proved so unsatisfactory that many States have made the infringement of a trade-mark a criminal offense, with fines varying from $100 to $1000, and imprisonment varying from three months to two years. Where specific laws do not exist, protection of trade-marks may be had under the common

law, so that a trade-mark may be registered to cover all the territory of the United States, including the Philippine Islands, Hawaii and Porto Rico.

The cost of registration varies in the different States from $5 to $10. Total registration may be had for something like $300, we are informed. This is a considerable sum of money, and in addition there are the labor and annoyance of accomplishing the registration. However, if the laws must stand as they are, the expense and annoyance will be less, perhaps, than what might come with the action of an unscrupulous competitor that would compel expensive litigation.

Canadian Action Against Dumping.

Canada has come to the conclusion that the practice of dumping by foreign manufacturers must be checked. Fiscal matters in that country have thus taken an unexpected turn. The iron and steel manufacturers, as shown in our recently published Canadian correspondence, have long been pressing for increased duties to protect them from foreign competition. The Government has now formulated a plan for their assistance, but not by the desired general advance in the tariff. Mr. Fielding, the Minister of Finance, in his presentation of the budget on June 7, announced that no general revision of the tariff would be made until the next session of the Canadian Parliament. In the meantime Canadian manufacturing interests are to be more thoroughly safeguarded by countervailing duties placed on goods dumped on the Canadian market. It is interesting to note the explanation of the adoption of this policy as made by Mr. Fielding. By way of introduction, the fact should be stated that the present Canadian administration is theoretically opposed to protection. To preserve the appearance of consistency, and at the same time afford still greater protection to Canadian industries than heretofore given, required no little ingenuity.

Mr. Fielding referred to the fact that new conditions had arisen which compelled themselves to be noticed, alluding to the great falling off in the domestic business of the United States and the increased efforts of our manufacturers to secure Canadian business. He made the old and oft refuted statement that in low tariff or free trade countries, Great Britain for example, these disturbing conditions seldom exist; that England sells at a profit, "and what is known as system of dumping or slaughtering is hardly known in connection with British trade; but in the case of all high tariff countries these objectionable conditions arise." He said that while monopolies, trusts and combines may exist even in low tariff countries, they flourish under the high tariff policy as they could not possibly flourish under other conditions. He then went on to say that high tariff countries have adopted that method of trade which is now to be known as slaughtering or dumping. He explains by this that a "trust or combine, having obtained command and control of its own market, and finding that it will have a surplus of goods, sets out to obtain command of the neighboring market, and for the purpose of obtaining control of that market will put aside all reasonable considerations with regard to the cost or fair price of the goods. The only principle is that the goods must be sold and the market obtained." He thus appeals to the popular prejudice against trusts, ignoring the fact that some low prices have been made in Canada by manufacturing companies not classed as trusts. He then proceeds to say that if the trusts and combines in high tariff countries would come to Canada under obligations and with sufficient bonds to supply Canadians with their products at the lowest prices for the next 50 years, it would probably be the part of wisdom for Canada to close up some of its industries and turn its people to other branches. But he says that nobody imagines that when these trusts and combines send goods into Canada at sacrifice prices they do so for any benevolent purpose. They send them "with the hope and the expectation that they will crush out the native Canadian industries and then, with Canadian industry crushed out, what would happen? The end of cheapness would come and the beginning of dearness would be at hand." All this reads like very good protectionist doctrine, notwithstanding the commendatory allusion to the British free trade policy. He continues: "This dumping is an evil and we propose to deal with it. Perhaps it would not be too much to say that 90 per cent. of the complaints that are made to us by our manufacturers are not that the tariff is too low, speaking generally, but that this dumping and slaughtering condition exists and that the tariff under such conditions fails to give them the protection which they would desire. . . . We think it is in the interest of legitimate trade that this question should be dealt with. It is not the first time that Canada has set an example in matters of this kind, and possibly the step we are about to take will be followed by other countries." The test by which it is proposed to show that an article comes under this category is that it is sold at a lower price in Canada than in the country of production.

The method which will be pursued in applying the additional protection is by imposing a special or extra duty upon the dumped goods, which will represent the difference between the sacrifice price and the fair market value of the goods in the country of production. The extra duty is not to apply to articles on the free list, excepting wire rods, on which an extra duty can be levied up to 15 per cent. On certain articles of iron and steel on which bounties are paid by Canada the special duty is not to exceed 15 per cent., but in other cases the limit of extra duty is 50 per cent. of the present duty. The extra charge would be mainly levied upon goods produced in the United States, this country being by far the leading source of supply for Canadian purchasers of foreign merchandise. To some extent German manufacturers send their products into Canadian markets, but Germany some time ago became the object of special tariff treatment by Canada and has since then been at a disadvantage.

The action taken by the Canadian Government will possibly not be satisfactory to some of the most important Canadian manufacturers of iron and steel. They do not receive the specific protection which they have asked. At the same time they have been disarmed from any criticism of the Government by the fact that the Canadian manufacturing industries are in a general way better sheltered from attacks than they have been. The new move shows how thoroughly the Canadian Government is committed to the protection of the interests of its people. The political complexion of the party in power appears not to affect its policy. How far the Canadian trade of our manufacturers will be injured remains to be seen. Undoubtedly, they will suffer to some extent, but that will depend upon the disposition of Canadian buyers to disclose the prices paid by them. The consumer is not generally so much in harmony with the manufacturer as to assist cordially in a movement to advance upon himself the cost of his supplies. Heretofore, undervaluations in invoices have been the *bête noir* of Canadian customs officials. Under the new conditions they are likely to find that they will have to contend with overvaluations.

Steel Axles.*

Can too much importance be attached to this, the most important part of the rolling stock of the railroad systems of to-day? Which other portion of the car or locomotive has more important functions to perform than the axle? Upon which other portion does the protection of life and property depend to so great an extent as it does upon the axle? Upon the care with which its proportions are calculated, its shape designed and its manufacture carried out depends, to a great extent, the successful working of the rolling stock and the transportation of the products of our country.

The railroads of a country are indicative of its strength, resources and importance. Has any one thing been more responsible for our commercial supremacy than the excellence of our railroad systems and the men to whom the high degree of efficiency found therein is due? In what other country do we see solid trains of cars, the lading of each of which approximates, and may exceed, the marked capacity of 50 tons? Would this condition have been possible without the substitution in the working parts of metal with greater strength, tenacity and resiliency than unreliable iron of low elasticity and tensile strength?

The Comparative Merits of Steel and Iron

for car axles is a question which has engrossed the attention of railroad officials and axle makers for many years. We feel justified in saying that the experience of these years has demonstrated that steel is superior to iron for this purpose, not only on account of its greater power of resistance against the shocks and vibrations to which it is subjected in service, but also on account of its greater wearing properties, the friction being less than in the iron axle, where lack of sufficient heat, presence of scale or other conditions often prevent perfect adhesion of the various constituent parts. Even a perfectly welded iron axle will not allow the high polish and minimum amount of friction obtainable in the steel axle of the proper composition. Our secretary, Mr. Taylor, has suggested that we divide our paper into subheads, as follows:

A—Method of manufacture.

B—Our opinion as to best specification, chemically and physically, and a review of the present master car builders' specifications.

C—What we have found as a result of the examination of broken axles.

A.—Method of Manufacture.

In the early days of steel axles the steel maker had difficulty in proving the superiority of his product, as there were numerous breakages in service for which he could not account, his chemical analysis indicating that the elements were of the proper proportion to the evident requirements of the purpose. In looking for the cause he found that while his light hammer, of probably 2000 pounds falling weight, was sufficiently powerful for building up iron bars, probably 1 to 2 inches thick, into an axle of approximately 5½ inches diameter, it was entirely inadequate for forging steel axles, as steel, not possessing the welding properties of iron, could not be forged in the same manner.

Instead of building up from bars 1 to 2 inches thick, he was compelled to reverse the method, and hammer down from a billet about twice the size his finished forging should be. His hammer not being sufficiently powerful to penetrate throughout the mass, it did not give the axle that homogeneous structure so essential in a forging subjected to the heavy alternating stressses which a car axle undergoes in service. The internal condition of his axle, revealed to him by the end of his rough forging, which was a deep concave, showed that the surface metal only had expanded, and that the inner portion had not received the proper working and consequent homogenity of structure which he desired. It also showed inclination to "pipe."

He appreciated his position and promptly strengthened it by the installation of heavier hammers of about three times the weight formerly used. Whiles he immediately saw a distinct improvement in his forging (the end now being convex, indicating that the inner portion had received proper attention), the steel axle did not give the absolute satisfaction of which he thought it capable, and an investigation proved to him that heat treatment in the forge was largely responsible.

He reasoned that, as no two parts of the axle were forged at the same temperature, internal strains had set in, which were very detrimental to the forging, and which would have to be relieved. This was particularly evident in locomotive driving axles, which, after cutting the keyway, thereby relieving strains in the fibers, would often become distorted.

To relieve the injurious strains above stated, he resorted to annealing. By heating the forging to a temperature slightly above the recalescent point (which, in steel of carbon usually found in axles, would be approximately 1200 degrees F.), he eliminated all crystallization resultant from the cooling from the forging temperature of about 1800 degrees F., and a fine amorphous structure was obtained.

Crystallization would, of course, set in again when the forging was being cooled, but as in the annealing he did not approach within 400 or 500 degrees the temperature at which his axle was forged, the resultant crystallization was comparatively small. While the ductility of the annealed forging was greatly increased, it suffered a slight loss in elasticity.

Realizing the importance of having a high degree of elasticity in his material, which was continually subjected to severe alternating tension and compression, and often torsional strains, the axle maker started to experiment with a view of not only maintaining the elasticity found in the original forging before annealing, but also to increase it. Various methods have been used to gain this result, among the more prominent being the Coffin toughening process and oil tempering and annealing, either of which gives the following results:

1. The elastic limit is increased to a marked degree.
2. The percentage of elongation and reduction of area are greatly increased.
3. A remarkable degree of toughness is obtained.
4. The steel changes from a crystalline to an amorphous state.
5. Internal stresses are eliminated.
6. Uniformity of structure and strength are obtained.

The increase in elasticity is of the greatest possible benefit, as it is a recognized fact that, once the elastic limit of metal has been passed and the forging therefore distorted, it cannot be depended upon to sustain even minor loads. In wrought iron forgings the elastic limit probably does not exceed 20,000 pounds per square inch. Steel of, say, 0.45 carbon, properly treated, will show almost three times as much elasticity, and is, therefore, much better fitted for the service described.

Realizing that in material of this kind, whereon so much depends, that the best is none too good, the modern steel manufacturer has installed complete chemical, physical and microscopical laboratories, which tell him the results obtained throughout the various stages of manufacture, and in the final treatment at the annealing furnace he raises or lowers the physical properties to the required specifications, carefully and intelligently guided by reliable pyrometers, which show the operator the exact temperature of his furnace at any and all times.

The method of manufacture, then, we consider of great importance. Our claim that a steel axle, properly forged and afterward properly annealed, is infinitely superior in strength or wearing properties to the best iron axle, we think, can hardly be disputed.

While the art of steel making has been perfected more and more year after year, the material and skill for making the best quality of iron have, on the contrary, retrograded, and at the present time a good grade of iron is scarce, largely on account of the difficulty in obtaining the necessary good quality of scrap, that now available being composed of inferior iron intermixed with pieces of steel of various grades, which produce imperfect welds and irregularities in the finished axle. This lack of homogenity permits the torsional strains and frition to separate the fibers of the metal. Longitudinal seams and

* Read before the Western Railway Club, Chicago, May 17, 1904, by J. L. Replogle, superintendent forge and axle departments, Cambria Steel Company, Johnstown, Pa.

rough spots develop which finally result in the failure of the axle.

B.—Specifications.

Our opinion as to the best specification would be an indorsement of the present master car builders' specifications, with a few exceptions, viz.:

1. We should recommend an increase in carbon, making the limit 0.40 to 0.55 per cent., instead of 0.35 to 0.50 per cent., as at present. This would insure greater wear, permitting a higher polish, with a consequent reduction of friction, and, if properly treated, greater strength, but would necessitate a slight modification of the present drop test.

2. We should insist upon all axles being thoroughly annealed, as by this method only is the true strength of the steel represented.

3. We would adopt a maximum weight clause compelling manufacturers to rough turn forgings on journals and wheel seats to within ⅛ inch of your finished dimensions, thereby eliminating the necessity of your paying for 50 to 75 pounds of excess material per axle, which also necessitates a vast amount of extra work and expense at the railroad shops, subjecting your lathes to both roughing and finishing duties, which is detrimental to the best results in fitting.

4. We should recommend a maximum limit on phosphorus of 0.05 per cent., instead of 0.07, as at present, to compensate for the recommended raise of the carbon by five points, both elements being hardeners, but carbon affecting the ductility less than the phosphorus and being conducive to greater wearing qualities.

5. We would modify that portion of clause 1, in the specification relating to the rough turning of axles, to read: "Axles must be rough turned on journals and wheel seats to within ⅛ inch of finished dimensions, and must be smooth forged between wheel fits." Rough turning an axle between wheel fits robs the axle of the tough surface skin, which is a very valuable asset.

In this connection I would cite results of a test made at our works to demonstrate our claim: During a controversy with an inspector of a prominent road which specifies rough turning all over, we suggested to him that he take two axles of the same heat, one being rough turned to 5⅞ inches in center, the other being smooth forged to the same dimension. These axles were subjected to same treatment throughout and were then tested to breakage. The rough turned axle stood 21 blows of a 1640-pound drop from 43 feet hight, and the smooth forged one stood 78 blows, or almost four times as severe a test. Tensile tests cut from the broken axles showed the same chemical and physical structure.

Extensive tests made at another works by one of the leading railroads specifying this show that, in axles of the average carbon, the smooth forged axle will stand approximately 43 per cent. harder test than the rough turned one. Rough turning an axle also makes it more susceptible to rust.

These are but a few tests of the many made along this line, the aggregate of which leads us to believe that the railroads of this country are annually expending hundreds of thousands of dollars on this feature, and are thereby getting an inferior axle.

C.—Broken Axles.

In 15 years' experience in the manufacture of steel axles the writer recollects of but seven of our axles having failed in service, four of these being due to inferior design, the wheel fit sizes being ⅜ inch under the master car builders' standard dimensions.

We believe this record is due not so much to the superiority of the steel itself (although the company whom I have the honor to represent are the pioneer steel company of America), but to the fact that it is the policy of our company to thorough anneal every forging produced, thereby eliminating all forging strains and results of imperfect heat treatment, and restoring to the steel its initial or intrinsic strength. Our experience with broken axles, therefore, is limited, and perhaps other members of the club can give more information on this subject than the writer.

We have, however, seen broken axles around in various railroad shops, the examination of which leads us to the conclusion that failures were due to the fact that the steel used was too low in elasticity and tensile strength, steel of probably 0.30 or 0.35 per cent. carbon being used. The failures were due largely to what has been termed fatigue of metal, and show a detail fracture, a gradual parting of the steel, extending toward the center all around the piece, unquestionably caused by the imposed strains repeatedly approaching the low elastic strength of the soft steel. The substitution of a steel of higher carbon and elasticity would prevent failure of this kind.

The observations of Dr. Charles B. Dudley, the eminent chemist of the Pennsylvania Railroad Company, are interesting and pertinent to this subject, and we quote him: "It is obvious that the journal of a car axle gets alternate bending stresses—that is, the metal is subject to alternate tension and compression with each revolution—and that during the life of an axle these stresses are many thousand, and perhaps million, times repeated."

Again, the metal between the wheels is in like manner subjected at each revolution to the same alternating stresses. The effect of these repeated alternate bending stresses is almost too well known to need comment. Sooner or later, if the stress is high enough, all metal will rupture under these alternate strains.

A marked characteristic of the fractured surface of a piece of metal which has broken from this cause is that it never presents fibrous appearance in the fracture, but is more or less smooth, possibly due to the fractured parts rubbing against each other, and having the appearance of an old break. It commences where the maximum stress occurs on the surface of the section, and gradually works in from the surface until so small a part of the original area is left unbroken that a sudden shock or stress finishes the rupture. This breaking slowly, a little at a time, led to the description of this fracture as "detail fracture," which will never be confounded with a rupture produced in any other way.

The experience of the Pennsylvania Railroad Company on car axles on this point may be interesting: Steel axles were first used on the Pennsylvania Railroad in 1875. The maximum calculated fiber stress between wheels was about 15,000 pounds per square inch, and the maximum fiber stress in the journal was about 6700 pounds per square inch. The steel of these axles was an acid open-hearth steel, containing from 0.22 to 0.28 per cent. carbon, and not over 0.04 per cent. phosphorus, and with a tensile strength of about 65,000 pounds per square inch and an elongation in 2 inches of over 25 per cent. So tough was this steel that one passenger car axle was tested under the drop test with 67 blows without rupture. Some 300 of these axles were put in service, and in the course of two years the journals began to fail from detail fracture. The matter became serious, and a consultation was held as to how to meet the difficulty. There seemed but two ways of procedure, either to increase the size or to change the nature of the metal. Since an increase in size meant a redesign of all the parts, the latter alternative was chosen, and a metal of 80,000 pounds tensile strength was substituted for the softer steel, no other changes being made. This completely cured the difficulty, and no case of breaking in detail in car axles is known to have occurred since that time, unless the metal was of lower tensile strength than the figure given, or the axle was worn to limit, so that the maximum fiber stress was too high.

Endurance tests made at the Watertown Arsenal by the United States Government on wrought iron and 0.45 per cent. carbon steel bars, 1 inch diameter, 36 inches long, loaded in the middle so that the fiber stress was 40,000 pounds per square inch, show a great superiority in favor of the latter. These bars were rotated 1500 times per minute, the number of revolutions being recorded. The average number of revolutions of the wrought iron was 59,000, while the 0.45 per cent. carbon steel bars broke after 976,000 revolutions, or 16½ times as severe a test.

To test the value of iron or steel for car axles, and the effect of strains similar to those imposed in service, Mr. Wohler, chief engineer of the Prussian State Railway, constructed machines for the purpose, by which the bars were exposed to vibrating actions and repeated strains within adjustable limits.

First, for straining a cylindrical bar in a manner similar to that in which an axle is acted upon by the load it carries, a bar, placed in bearings, was caused to revolve; to one end (corresponding to the journal of the axle) was attached a spring, giving a constant downward pull, by which action the bar was bent down at the end to a fixed distance, and, in its rotation, the action of the spring caused it to bend in all directions successively all around the circumference of the bar, by which means the alternate strains of compression and tension were produced. The breaking strain of fibrous iron under these conditions was from 20,160 to 22,400 pounds per square inch; soft steel, 26,880 to 33,600 pounds per square inch.

Testing further, the effect of repeated strains applied to the center of a revolving axle, in which the fibers in each section are strained in the same direction each time, the tension on each fiber varying between zero and the strain imposed, was as follows: Fibrous iron broke at a tensile strain of 33,600 to 40,320 pounds per square inch; soft steel at 50,400 to 56,000 pounds per square inch.

Walter E. Koch, formerly of the works of Landore (the original Siemens works) and later of Pittsburgh, in his paper on "Fifteen Years' Experience With Open Hearth Steel," says: "Statistics show in Great Britain that eight iron axles break to every one of steel, and it is astonishing to me that so many iron axles are still in use in this progressive country." Mr. Koch, when written to concerning this statement, said: "I referred to straight, and not to crank, axles, and at that time there were about half iron and steel in use."

We could cite results of many such experiments made by many men under many different circumstances, but it was long ago demonstrated that too much statistical information is not wanted, the average man's aversion to such data being well expressed by Hon. C. D. Wright when he said: "Figures won't lie, but liars will figure." We feel that the steel axle is now so well established that the many experienced gentlemen who are with us to-day can contribute information of far greater value.

Liquid Fuel in the Navy.

WASHINGTON, D. C., June 14, 1904.—The Liquid Fuel Board of the United States Navy, composed of Commander J. R. Edwards and Lieutenant Commanders W. M. Parks and F. H. Bailey, have completed their final report upon an elaborate series of tests extending over a period of two and a half years and involving expenditures approximating $200,000. The report will not be given to the public until the Secretary of the Navy has had an opportunity to examine the conclusions in detail. Certain facts can be stated at this time, however, and will doubtless be found of interest to all steam users.

The experiments made by the board were conducted in this city in a plant especially constructed for the purpose by the Oil City Boiler Works. The boiler, of the Hohenstein design, is the same that was used by the Navy Department in conducting an extended series of tests with coal at various rates of combustion, and the board was thus enabled to compare the results secured in the burning of oil with carefully recorded tests with the best grades of coal burned under a variety of circumstances.

Kind of Oil Employed.

The oil used in the principal tests, including an endurance test of 116 hours, was from the Beaumont, Texas, field, and was subjected to an inexpensive treatment which removed the sulphur and some of the more volatile hydrocarbons. In the later stages of the experiments a special series of tests was made with oils from various fields for the purpose of comparing their thermal efficiency.

The specific questions which the board sought to determine embraced the evaporative efficiency of oil as compared with coal under like conditions; the degree to which the combustion of oil could be forced with both steam and air atomizers when using both natural and forced draft; the ability of a hydrocarbon burner to work under forced draft conditions; the liability of the boiler to injury when using oil under forced draft conditions; the amount of steam or air requisite for atomizing purposes; the degree of pressure which should be applied when steam or air was used as the atomizing medium; the effect of preheating the air necessary for combustion; the time required to train men to operate the burners; the best means of reducing the noise caused by the numerous but minute explosions within the furnace; the attitude of the firemen as regards operating an oil installation.

Concerning evaporative efficiency, the board has not found the thermal advantages of liquid fuel to be superior to the very best grades of coal, but it has been demonstrated that it is much easier to force a marine boiler with liquid fuel than with coal, a fact of the highest importance to the navy and one which gives a special "emergency value" to an oil installation.

Burner Problem a Simple One.

The ability of a hydrocarbon burner to work under forced draft conditions has been fully demonstrated. It has further been shown that the hundreds of designs for burners, submitted to the board by inventors, manufacturers and steam users in all parts of the country, are reducible to a half dozen comparatively simple types, which can easily be manufactured in any small machine shop, and which are based upon principles so well known that no user of liquid fuel will be compelled to pay a royalty for even the most efficient burner now before the public. The liability of the boiler to injury when using oil under forced draft conditions is a question to which the board has given very close attention. The only ill effect directly traceable to the use of oil has been the slight corrosion of seams, due to certain chemical constituents which are eliminated upon slight distillation. The great heat noted in the fireroom and the burning away of the base of the stack, which at first caused the board considerable anxiety, were entirely obviated by the slight distillation referred to, and under present conditions water tube boilers promise to withstand the effects of oil longer than those of coal.

As to the amount of steam or air requisite for atomizing purposes, the board finds that much will depend upon the character of the installation and the amount of space available. Air compressors are comparatively bulky, as are also the auxiliary appliances for the use of a steam jet, and much will depend upon the peculiar conditions to be met in each case. It has been clearly demonstrated that the consumption of oil can not be forced to as great an extent with steam as the atomizing agent, as when compressed air is used for this purpose, which the board believes to be due to the fact that the air used for atomizing purposes, after entering the furnace, supplies oxygen, while in the case of steam the vapor merely displaces the air that is needed to complete combustion.

Skilled Labor Essential.

With regard to the attitude of the firemen toward liquid fuel, the board finds that, generally speaking, where the fire room force is fairly intelligent, not only is there no opposition to the use of oil, but the results secured are very satisfactry. On the other hand, if the firemen are ignorant, they are apt to develop a prejudice against the fuel, and their handling of it is such as to make it a very unsatisfactory substitute for coal. Skilled and intelligent firemen can be trained to use oil efficiently in the couse of a very few days, but with unskilled men of low intelligence numerous dangers are to be apprehended. The use of oil in connection with coal under any circumstances is strongly opposed by the board. All experiments along these lines have demonstrated that such a combination is both wasteful and dangerous.

The report of the board will doubtless be found to be of greater practical value to the merchant marine than to the navy, for the reason that the problem of safely stowing on warships large quantities of petroleum for use under service conditions and the procuring of supplies on distant naval stations, is entirely different from that to be met by merchant steamers operated between certain fixed points, where supplies can easily be collected and stored. At the same time, the use of oil as fuel on warships opens up such possibilities, in view of the enormous production of petroleum in this country, and its availability on the Atlantic, Pacific and Gulf coasts, that the subject is likely to receive the constant attention of naval experts for a long time to come. W. L. C.

MANUFACTURING.

Iron and Steel.

The Canonsburg Steel & Iron Works, Canonsburg, Pa., are operating their plant nonunion. The Amalgamated Association has sent out a circular warning union men from accepting positions with the firm. However, the company are paying no attention to this and are going ahead in the operation of the plant regardless of Amalgamated scales.

The Spiral Riveted Tube Company, whose plant is at West Bergen, near Jersey City, N. J., are winding up their affairs preparatory to going out of business. The plant is valued at $25,000.

The Cherry Valley Iron Company, Pittsburgh, will blow in their Fannie Furnace, at West Middlesex, this week. This stack is a new one, 17 x 70 feet in size, but has been out of blast for some time. At the time the furnace was built new blowing engines and an automatic skip were installed. Two new trestles for the unloading of ore and coke were also built. As soon as this stack is started it is probable that the Cherry Valley stack owned by the company and located at Leetonia, Ohio, will be blown out and an entirely new stack erected.

The Parkersburg Iron & Steel Company, operating sheet mills at Parkersburg, W. Va., expect to keep their plant in full operation during the summer months, with the exception of a shut down for a week or ten days in order to allow needed repairs to be made.

The McClure Company, Pittsburgh, operating tin plate mills at Washington, Pa., are running their plant full time and have a large amount of business booked for their various makes of roofing tin.

At South Sharon, Pa., the American Sheet & Tin Plate Company are erecting a continuous sheet mill. The mill will be located in the plant of the Sharon Sheet Steel Company, which was taken over by the United States Steel Corporation in the purchase of the Sharon Steel Company properties. The plant contains 12 mills, but was never operated. The process for the continuous rolling of sheets is the invention of C. W. Bray, and will be similar to the continuous tin plate process now in operation at the Monongahela plant of the American Sheet & Tin Plate Company, Pittsburgh. It is expected that the plant will be ready for operation about the first of next year.

A number of hot mills in the Monessen works of the American Sheet & Tin Plate Company, at Monessen, Pa., which have been closed for about a month on account of a crippled engine, have been started up. The Monessen works contains 25 hot mills, all of which are now in operation.

General Machinery.

The Ohio Pump Company, recently organized at Port Clinton, Ohio, for the manufacture of pumps, advise us that it will be some months before they are ready to turn out finished products.

The Wright Taper Roller Bearing Company, Buffalo, N. Y., have been adjudged a bankrupt.

The R. J. Schwab & Sons Company, Milwaukee, Wis., founders and manufacturers of the well-known Gilt Edge house heating furnaces, have commenced the erection of an office building and store house adjoining their works on Clinton street. The building will be three stories in hight and modern in every particular, with spacious offices on the Clinton street side and sample and store rooms in the rear and upper stories. The exterior will be constructed of cement blocks, which are coming into such general use in structural work. One of the leading lines of the Schwab Company is the manufacture of machines for making cement blocks, and their building will stand as one of the examples of what can be accomplished with cement blocks, both from an enduring and an ornamental standpoint.

The D. M. Bassett Bolt Works, Derby, Conn., incorporated in March last and succeeding to the old established business of the late D. M. Bassett, announce that they are now fully equipped for doing light drop forging work of all kinds. This line of work has just been taken up in addition to the manufacture of Eagle carriage bolts, which are well known to the trade. The drop forge department is in charge of G. W. Sneadon, a man of practical experience in this work.

A. E. Jones, Union City, Conn., manufacturer of special machinery, is erecting a new shop, 30 x 50 feet, two stories high, the equipment for which, it is stated, has been arranged for. It is proposed later to produce a line of machine shop tools.

The Webster Mfg. Company, engineers, founders and machinists, Chicago, recently secured a contract to furnish power transmitting machinery for the new compartment house of the American Malting Company, Milwaukee, Wis.

The Canadian Pacific Railroad have now under construction at Winnipeg, Manitoba, new locomotive shops, upon which the work is being pushed forward rapidly by the Manitoba Construction Company, who have the contract. A portion of the machinery to be installed has already been received.

The Bignall & Keeler Mfg. Company, Edwardsville, Ill., manufacturers of pipe threading and cutting machines, name among recent shipments one to the Crane Company, Chicago, of an 18-inch pipe cutting and threading machine; an 8-inch machine and a 12-inch motor driven machine to J. H. Coffin & Co., Memphis, Tenn.; five machines to the Pacific Coast; a 6-inch machine to the State Hospital at Norristown, with motor drive; one 8-inch machine to Armour & Co., Sioux City, Iowa. The company report that last month's business was better than any since the first of the year. Inquiries are plenty, but the general tendency seems to be to bid very low on all classes of machinery.

A recent fire occasioned a loss of about $8000 to the building occupied by the Kay-Pim Mfg. Company, manufacturers of power transmission machinery, St. Louis, Mo. A contract has been let for a new building, and the company expect to be in running shape again in about 60 or 90 days.

The Cotton Picker Company have been incorporated with a capital stock of $15,000,000 for the manufacture of cotton picking machinery. No information as to the plans of the company can be obtained from the incorporators at the present time, the majority of whom are lawyers and are located at 170 Broadway, New York. Address R. H. Lansdale for particulars.

The Sibley Machine Tool Company, South Bend, Ind., are successors to Sibley & Ware.

It will be known definitely this week whether the interests of the Youngstown Foundry & Machine Company and the Youngstown Steel Casting Company, both at Youngstown, Ohio, will be consolidated. It is said that if the consolidation is made W. J. Wallis will be general manager of the new concern. He is now vice-president and general manager of the Youngstown Foundry & Machine Company.

The Electrical Safety Clutch Company, Akron, Ohio, have been incorporated with $62,500 capital stock, by A. Williams and others of Akron, to manufacture an electrically operated safety device for quickly stopping engines, shafting or machine tools. The company will establish a factory in Akron.

The Findlay Foundry & Machine Company, Findlay, Ohio, have been chartered with $50,000 capital stock, by E. C. Taylor, C. F. Speice, J. M. Stern, W. E. Gorell and D. H. Thomas.

Power Plant Equipment.

The Parkhurst Compound Steam Boiler Company, Oswego, N. Y., have gone into bankruptcy. The company were organized about a year ago and purchased the plant of the Oswego Boiler Company.

The Hartford Electric Light Company, Hartford, Conn., have bought a tract of land in that city and will erect a power plant to take the place of their present Pearl street plant. The company's Parsons turbine will be removed to the new plant, and it is understood that they will install another engine of the same type, as well as increase their boiler capacity.

The Board of Public Service of Canton, Ohio, are advertising for bids until June 27 for a 12,000,000-gallon triple expansion pumping engine and three 200 horse-power boilers.

The Ridgway Dynamo & Engine Company, Ridgway, Pa., have just been awarded a contract for four 75-kw. direct connected generating sets by the War Department, through its Major of Engineers at Seattle, Wash. These generating sets are to be used for lighting and power purposes at the various army posts in the neighborhood of Seattle, and are to be delivered on Short notice, as the Government is in urgent need of them. The company have been fortunate in securing orders during the past month, and find themselves with considerable business on their books.

The Maxwell & Fitch Company, Rome, N. Y., have been incorporated for the manufacture of gasoline engines, with a capital stock of $12,000. The directors are H. B. Maxwell, L. M. Fitch and Christina S. Fitch.

The city of Brunswick, Maine, has given a contract to B. F. Smith & Brother, Boston, Mass., for a complete line of water works with a capacity of 2,000,000 gallons a day. They will require pumps and all the fittings for water works.

The Jamesville Mfg Company, Jamesville, N. Y., manufacturers of artillery and steel wire wheels, hubs, steering knuckles, &c., intend to install a steam plant to operate their works, and are now seeking information as to boilers, engines and accessories.

The Quincy Engine Works, Quincy, Ill., advise that there appear to be more inquiries for Corliss engines and for special machine work than heretofore, although the inquiries call for smaller engines than for some time past. Two notable sales recently made are a 30 x 48 inch heavy duty Corliss engine to run at 100 revolutions per minute, on the shaft of which is to be mounted an 800-kw. alternating current generator, and also a 250 horse-power vertical compound engine with a special valve gear to drive a centrifugal pump.

The Butler Engineering Company have been organized at Butler, Pa., and will erect a plant for the manufacture of gas and gasoline engines.

The Buckeye Gasoline Engine & Foundry Company have been incorporated at Joliet, Ill., with a capitalization of $50,000. Those interested in the new company are Colonel Bennett, G. J. Buckeye and Jacob Berlein of Joliet, and J. A. Raymond and Peter Michels of Aurora, Ill. Three buildings will be erected, two of them being 50 x 80 feet each, and the third 50 x 210 feet. One of the buildings will be used as a storehouse, one for the foundry and the third for manufacturing purposes.

E. J. Main of Swanzee, Ind.; George and David Main of Cairo, Ill., and J. M. Main of Upper Sandusky, Ohio, have purchased the interest of L. C. Cole in the business of the National Steam Pump Company, Upper Sandusky, Ohio. The company will be reorganized with $150,000 capital stock and the business will be enlarged.

The Board of Trade of Crooksville, Ohio, are forming a company among its members for the purpose of building a city water works system. Plans prepared for the plant call for an expenditure of about $35,000.

Foundries.

The McConnell Wheel & Mine Supply Company, Uniontown, Pa., who have taken over the plant formerly operated by the Keystone Foundry Company, advise us that they expect to be in operation in about 30 days. The product of the plant will be gray iron castings.

The Harman-Cogger Company, Bloomsburg, Pa., are about finishing a contract with Walter E. Irving, New York, for 1100 wall posts and over 700 mangers to be used in the new stables of the American Express Company, New York. They have also a number of contracts for special pipe fittings, ranging from 27,000 to 80,000 pounds, from 7 to 8 inches diameter, all to the order of M. W. Kellogg & Co., New York. They have under way contract for 4000 stair risers and 4000 pairs of brackets, having total weight of 200,000 pounds, for Ravitsch Bros., contractors, New York. They have furnished a large number of building columns for new erections in the burned district of Baltimore, Md., latest shipments being to the Wilson Distillery Company and Bartlett, Hayward & Co.

The Hance-Brown Casting Company, Columbus, Ohio, recently organized, have taken over a plant to which they have built an addition for the cupola and molding floor. They will pay special attention to the manufacture of fine malleable gray iron castings. H. T. Hance is secretary.

The American Locomotive Company, Schenectady, N. Y., who are to erect a new foundry, are remodeling one of the old foundry buildings and equipping it as a wheel shop.

Alphonse Aubin, Boston, has bought the foundry and machine shop of William Sultor & Son, at West Derby, Vt. A general job work business has been done at the plant.

The Cumberland Foundry & Mfg. Company, Nashville, Tenn., have increased their capital stock from $10,000 to $50,000.

The Ridgway Foundry Company, Ridgway, Pa., have erected a building, 40 x 80 feet, for the manufacture of iron, brass and bronze castings. The company began business on May 1, and since then have had a gratifying increase of orders.

Watson, Frye & Co., Bath, Maine, brass founders and machinists, are to build an addition to their foundry 16 x 70 feet. The firm have recently leased a lot which they will use for the storage of flasks and other material. The Ferro-fix process of brazing iron has been installed, the rights for Bath and vicinity having been purchased by the firm.

The main building of the plant of the Fanner Mfg. Company, Cleveland, at South Brooklyn, Ohio, was destroyed by fire June 11. The company are extensive manufacturers of stove mountings, gas and gasoline stoves and small castings, and they employ about 400 men, the majority of whom will be thrown out of work by the fire. It is thought the entire loss on buildings and equipment will reach $60,000, fully covered by insurance. President William Greif of the company states that the plant will be rebuilt at once. The company are several months behind on orders.

The Weir Stove Company, Taunton, Mass., are to add materially to their molding department by the erection of an extension, 60 x 110 feet. Work will be hastened that the new quarters may be occupied as soon as possible. It is the company's intention to take on 20 additional molders when the addition is completed. The purpose is not so much to increase the foundry production as to relieve the present force of molders of a part of the work which they are now compelled to accomplish.

The Curfman Car Wheel Company, Cleveland, have been incorporated with $60,000 capital stock. Incorporators: G. W. Curfman, J. W. Carts, B. Fordheimer, R. Kennedy and W. D. Wilkin. The company will manufacture a steel tire wheel for steam and electric railways. They have established offices at 712 Electric Building.

Bridges and Buildings.

Modern machinery, such as drills, punches, shears, wire straightening machines, &c., will be installed in their new plant when completed by the Portland Iron & Wire Works, Portland, Ore. Their plant was recently destroyed by fire, and it is the intention to rebuild as soon as possible on the old site, replacing the burned wooden buildings with larger brick structures, the plans for which are being prepared. Since the fire C. W. Boost, proprietor, has been occupying part of the plant of Trenkman & Co., where all orders for architectural iron and wire work are being executed.

The Marsh Bridge Company, Des Moines, Iowa, have secured the contract, amounting to $13,557.50, for the Middle street bridge at Kenosha, Wis.

The Globe Iron & Wire Works, Chicago, have reincorporated under the name of the Globe Iron Works, the capitalization being $100,000. The incorporators are W. B. Frolichstein, H. R. Wilson and Irwin L. Levy. Mr. Frolichstein is president and treasurer, and H. R. Wilson, formerly with the Noelke-Richards Iron Works, Indianapolis, Ind., is secretary. The company manufacture structural and ornamental iron work and wire work. They are finding business very active at present and are continually adding to their office force.

The commissioners of Mahoning County, Ohio, have awarded a contract to the American Bridge Company for structural work for a $16,000 steel bridge to span Yellow Creek in Poland township, that county.

Fires.

The Williamsport Valve Works, Williamsport, Pa., were destroyed by fire June 9, causing a loss of about $25,000.

The plant of the Vulcanite Roofing Company, Chicago, Ill., was partly destroyed by fire June 10.

The large plant of the Pearce Woolen Mills, Greenville, Tenn., was burned last week. The loss is placed at $200,000.

No. 4 breaker of the Lehigh & Wilkes-Barre Coal Company, at Audenreid, Pa., was destroyed by fire June 8, entailing a loss of $100,000.

Hardware.

The Waltham Clock Company, Waltham, Mass., are contemplating erecting a new four-story building. The additional room has become a necessity because of the increase in the company's business.

The Brinley Smith Company, Boston, Mass., have been organized to take over the business of Brinley Smith, manufacturer of a patent pulley for use in harnesses. The capital stock of the company is $40,000, divided equally between preferred and common.

The Franklin Safety Fire Escape Company have been incorporated under the laws of Maine with an authorized capital stock of $200,000. Pearl A. Libby of Franklin, Mass., is president and treasurer. The men interested are residents of Franklin, and the plan is to manufacture a fire escape in that place.

The Allen Iron Works, Adams, Mass., founders and machinists, have associated with them the None-Such Caster Company, for whom they will manufacture the None-Such repairable caster and truck wheels. This caster is designed to keep its wheels free from foreign substances, such as leather in shoe factories and yarn or thread in cotton mills.

The Winchester Repeating Arms Company of New Haven, Conn., are to erect a four-story building, 45 x 200 feet, of factory construction. One end of the building will contain some rooms for office purposes. The building will cost about $75,000.

The Lawrence Cordage Works, 46 South street, New York, have purchased the large plant at Jersey City, N. J., of the New Jersey Zinc Company, into which they will ultimately move their works from Brooklyn. Though much in need of better shipping facilities and more manufacturing and storage space, they have no intention of making the change before next winter or possibly later.

The Lemie Adjustable Level Company, Toledo, Ohio, capital stock $30,000, have been incorporated by John C. Jones, Jacob Lemie, Herbert A. Shanks, M. D. Merrick and Haskell C. Warren. They will manufacture a degree spirit level invented by Jacob Lemie, and the product will be sold through hardware jobbers. A location for a factory has not yet been selected.

J. W. Lilly & Co., Lestershire, N. Y., manufacturers of tinware, have been succeeded by the Lestershire Tinware Company.

The Automatic Roller Window Screen Company have been incorporated at Buffalo with $50,000 capital. The directors are William Thompson, William H. Brace and Charles Newton.

The Metal Stamping Company, Niagara Falls, N. Y., successors to the Niagara Falls Metal Stamping Works, will erect a new plant to afford adequate facilities for the increasing demand for their products. Work on the new plant is to be commenced at once.

The Kansas City Hay Press Company, Kansas City, Mo., have completed their new foundry building, which is 100 x 210 feet, and have equipped it with two modern cupolas, together with pneumatic elevators, by means of which the coke and pig iron are conveyed to the cupola floor. Compressed air is also used in operating the traveling cranes, chipping hammers, &c. The company are remodeling their old foundry building and will utilize it for machine shop purposes, installing in it cranes and riveting hammers, which will be operated by compressed air. In addition to these improvements, an office building will be built within the next 90 days, which will be four stories, 65 x 75 feet. The company are doing quite a large export business, shipments being made to Mexico, France, England, South America and other countries. Besides making hay presses, they are building a single cylinder, two-piston gasoline engine.

The last link connecting the Pittsburgh terminal of the Wabash Railroad with the entire Wabash system was completed June 13, when the local end of the road was connected with the Wheeling & Lake Erie Railroad at Mingo Junction. The road will be opened June 19.

The Iron and Metal Trades

The announcement that the troubles in lake navigation are over is likely to have little effect upon the Iron trade, since the practical holding up of shipments thus far this season has caused only occasional embarrassment to the furnaces. The majority of the large ore selling firms have declined to force sales at a sacrifice below the figures named earlier in the season, and there is no chance of demoralization in that direction. Resistance in that quarter and among coke makers discourages any attempts on the part of merchant furnaces who do not control their own material to resume, and takes the snap out of those who would like to keep running.

From the producers' side, the course of the market will depend upon the attitude of the Southern makers. The large interests apparently are determined to stay the downward tendency, but the smaller interests are taking what business is going at lower and lower prices. There are some good sized orders in the market, among them one lot of 12,000 tons by a Western Pipe maker and upward of 30,000 tons by a large agricultural implement consolidation.

There have been further sales of small lots of Southern Iron for export, but so far as we can learn only shipments to Mediterranean ports net approximately home prices. Still the movement is in the right direction.

What evidence there is bearing on the consumption of Foundry Iron is not particularly encouraging, so that there must either be a further sharp restriction of output or a yielding in prices temporarily, without regard to cost. The yards of melters are, however, bare all over the country.

In the Steel Rail trade two fair sized sales have been made lately. One is for 20,000 tons for delivery at Galveston, the business being taken by an Eastern mill in competition with foreign Rails, which, however, had little chance. The other is a lot of 10,000 tons for the extension into British Columbia of an American line. It was taken by a Western mill.

The outlook for Rail tonnage for the balance of the year is not encouraging. The principal mills, however, are fairly well taken care of for the summer.

A moderate amount of tonnage has been placed in Structural Material, but on the whole the demand thus far this season, notably in the Central West, has been distinctly discouraging.

The Plate trade continues dull, with only an occasional order of any magnitude. In the lighter lines there has been no material change.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

At date, one week, one month and one year previous.

	June15, 1904.	June8, 1904.	May18, 1904.	June17, 1903.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	$14.50	$14.50	$14.50	$18.75
Foundry Pig No. 2, Southern, Cincinnati	*11.75*	11.75	12.00	17.75
Foundry Pig No. 2, Local, Chicago	*13.25*	13.50	13.75	19.50
Bessemer Pig, Pittsburgh	*12.85*	12.85	13.60	19.85
Gray Forge, Pittsburgh	*12.35*	12.35	12.50	18.75
Lake Superior Charcoal, Chicago	*14.50*	15.00	15.00	24.00
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	23.00	23.00	23.00	29.00
Steel Billets, Philadelphia	24.00	24.00	24.25	30.00
Steel Billets, Chicago	*23.00*	24.00	24.00	30.00
Wire Rods, Pittsburgh	*29.00*	29.50	30.00	36.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	*9.50*	9.50	10.50	17.00
O. Steel Rails, Philadelphia	*11.25*	11.25	12.50	21.00
O. Iron Rails, Chicago	*14.50*	14.50	16.00	20.00
O. Iron Rails, Philadelphia	*14.50*	14.50	15.00	23.00
O. Car Wheels, Chicago	*11.00*	11.50	13.00	21.50
O. Car Wheels, Philadelphia	*11.00*	12.00	12.00	21.50
Heavy Steel Scrap, Pittsburgh	*11.50*	11.50	11.75	....
Heavy Steel Scrap, Chicago	9.50	9.50	9.50	16.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.48½	1.48½	1.48½	1.75
Common Iron Bars, Chicago	*1.30*	1.30	1.40	1.70
Common Iron Bars, Pittsburgh	1.35	1.35	1.35	1.75
Steel Bars, Tidewater	1.49½	1.49½	1.49½	1.75
Steel Bars, Pittsburgh	1.35	1.35	1.35	1.60
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.78
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.73½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.73½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	*1.35*	1.40	1.40	1.90
Skelp, Sheared Steel, Pittsburgh	*1.35*	1.40	1.40	2.00
Sheets, No. 27, Pittsburgh	*2.05*	2.05	2.10	2.65
Barb Wire, f.o.b. Pittsburgh	2.50	2.50	2.50	2.60
Wire Nails, f.o.b. Pittsburgh	1.90	1.90	1.90	2.00
Cut Nails, f.o.b. Pittsburgh	1.75	1.75	1.75	2.15
METALS:				
Copper, New York	*12.62½*	12.75	13.12½	14.50
Spelter, St. Louis	*4.75*	4.60	5.00	5.55
Lead, New York	*4.20*	4.25	4.50	4.12½
Lead, St. Louis	*4.10*	4.12½	4.37½	3.90
Tin, New York	*26.20*	26.70	27.87½	28.60
Antimony, Hallett, New York	*7.25*	7.25	7.00	7.00
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.64	3.64	3.64	3.99

Chicago.

FISHER BUILDING, June 15, 1904.—(*By Telegraph.*)

While the week under review has been rather better than the week previous in current pick-up business, it is lacking in large offers or contracts, and a feeling seems to be growing on the trade that several associations hitherto considered invulnerable are in a precarious condition. Southern Pig Iron has dropped to the basis of $9, Birmingham, for No. 2, with some buyers claiming that they can do even better, although no effort is being exerted by Southern producers to book business at this price. Northern Iron has dropped another 25c. at least, and there is no telling what price would be quoted to an inquirer for a round lot. The Iron business is at a standstill, because sellers are indifferent, each taking the attitude that he prefers some other to fill up with the low priced business, and buyers are none too anxious to fill up their yards at the present prices, which they will have to do to get it, as the furnaces are averse to taking long time contracts at present figures. Billets are being shaded by two or three independent producers, but even they are not securing extremely large tonnages. A good tonnage of Standard Section Rails has been booked within the last six or seven days, and every mail brings numbers of inquiries for prices on Light Sections, although the actual business done on Light Sections is inconsiderable. It seems to have been an off week on Structural Steel as far as large orders are concerned, with only a fair pick-up business. Plates are weak, and buyers again entertain some hope of being able to smash the Plate pool. Sheets and Light Plates are still weaker in price, although the demand is good, and mills have booked as much tonnage as they think safe for nearby delivery in view of the possibility of a labor tie up pending the settlement of the new scale July 1. The leading producer is reported in this market to have made a horizontal cut of

$2 per ton on all gauges of both Black and Galvanized Sheets running up into the lighter Plate gauges. The majority of local warehousemen are in favor of making a corresponding cut from store, and by the time this item is read the cut is likely to be in effect. There is nothing new to report in either Pipe or Boiler Tubes, business being only fair. Cast Iron Pipe has weakened in price in sympathy with the sagging in Pig Iron values. Old Materials seem to have lost some of the firmness which we reported last week, and nearly the whole list seems to be slated for further reductions. Metals have weakened in price, and the demand is very slow. The Coke situation is somewhat relived owing to the decreasing burden of demurrage Coke on track, but the demand is extremely light. Railroads, who are understood to buy about 40 per cent. of all Iron, Steel and metal goods in this market, are still inactive as far as buying is concerned, and until they do begin buying there is no hope for a strong upward turn. When they do begin buying, the feeling is that only a few of them will be able to cover at the present low figures, as the first good railroad specifications will be the signal for advancing prices.

Pig Iron.—The price of Southern Iron has settled down to a basis on which $9 will be made by a number of furnaces on nearby specifications, although there are few furnaces that are willing to load up with contracts for delivery late into the winter at that price. Some large producers still insist that they will take no business at less than the $9.50 basis, and they acknowledge that they are getting no business on this basis, preferring to stay out of the market than to load up with low priced Iron. This puts No. 2 Iron on track, Chicago, at $12.65, the lowest price in years. It now seems almost certain that the present freight rate of $3.65 from the Birmingham district will remain instead of being raised to $3.85 at the expiration of the two months' term, July 1, as the conditions which led to the freight reduction are still more acute than they were when the reduction was made. It will be impossible for buyers to secure for nearby shipment any tonnage of Gray Forge or Mottled Iron at the prices named below, owing to the great scarcity of the lower grades of Iron. Some furnaces, however, are willing to make the price named for delivery when such Irons occur in their heats. Northern Iron shares the weakness of the Southern product, and while we reduce last week's quotations 25c. per ton, our figures must be taken as nominal, because there is not enough business going to make a market. It is difficult to say what price would be accepted by a Northern furnace on a firm offer for a good round lot. The Iron bed manufacturers in the West are loading up with their year's requirements in Pig Iron and Scrap, as the time has come when they must decide upon the prices of their finished product for the coming season. The buying movement in both Northern and Southern Irons is surprisingly small, but there is still a hope on the part of the Iron interests that when it becomes generally known that $9 is obtainable buyers will come into the market who have been holding off months waiting for just such a price. Dispatches state that 1300 tons of export Iron were sold at Birmingham last week, 500 tons of which are now being loaded at Pensacola for export to England. On even terms, Southern furnaces prefer to export their Iron because of the spot cash payment which they secure on export business. The lake carriers' strike still continues, but the only furnaces in this district that are suffering from a shortage of Ore as a consequence are the Iroquois furnaces, and they have such a surplus of Pig piled in their yards that they are as indifferent to the Ore situation as other furnaces that have ample quantities of Ore in stock. The following prices include reductions on nearly every grade of Iron, the average reduction being 25c., with 50c. lower done on Southern Silvery and Virginia Basic:

Lake Superior Charcoal	$14.50 to $15.50
Northern Coke Foundry, No. 1	13.75 to 14.00
Northern Coke Foundry, No. 2	13.25 to 13.50
Northern Coke Foundry, No. 3	13.00 to 13.25
Northern Scotch, No. 1	14.00 to 14.25
Ohio Strong Softeners, No. 1	15.05 to 15.30
Ohio Strong Softeners, No. 2	14.55 to 14.80
Southern Silvery, according to Silicon	14.15 to 15.15
Southern Coke, No. 1	13.15 to 13.40
Southern Coke, No. 2	12.65 to 13.15
Southern Coke, No. 3	12.40 to 12.65
Southern Coke, No. 4	12.15 to 12.40
Southern Coke, No. 1 Soft	13.15 to 13.40
Southern Coke, No. 2 Soft	12.65 to 13.15
Southern Gray Forge	11.90 to 12.15
Southern Mottled and White	11.90 to 12.15
Malleable Bessemer	13.75 to 14.00
Standard Bessemer	14.80 to 15.05
Jackson County and Kentucky Silvery, 6 to 10 per cent. Silicon	16.30 to 18.30
Alabama Basic	12.90 to 13.15
Virginia Basic	13.85 to 14.10

Billets.—A determined effort is being made by buyers of Rolling and Forging Billets in this market to break the Billet pool, and many buyers have selected the present time as being opportune for playing one producer against another in the hope of securing a break in the solid front that has been presented hitherto. Quite a number of orders are being booked at $1 per ton below the pool prices, if not considerably lower, on the part of independents. Meanwhile pool prices remain unchanged, as follows: Forging Billets, 4 x 4 and larger, $24 per gross ton, Chicago, in carload lots; Axle Billets and Billets smaller than 4 x 4, $25.

Rails and Track Supplies.—Last week was rather better than the average on Standard Section Rails on the part of the leading Western producer, and some little business is being booked on Light Rails. Standard Sections are still sold on the $28 basis, while Light Sections seem to range between $22.50 for 35-lb. and $25 for 12-lb. sizes. Angle Bars are quoted at 1.35c. to 1.40c.; Spikes at 1.70c. to 1.75c., base, in car lots from mill, and 1.85c. to 1.90c. in small lots from store; Track Bolts remain at 2.20c. to 2.30c., base, in car lots from mill, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts. About 15c. to 20c. higher is charged for Track Bolts from store.

Structural Material.—This has been another quiet week as far as large business is concerned, with a disappointing showing on the small pick-up business. Prices are unchanged, as follows: I-Beams and Channels up to and including 15 inches and Angles 3 inches on one leg and larger, 1.76½c., Chicago; Tees, $1 per ton extra. Store prices on Structurals are as follows: Angles, Beams, Channels and Zees, base sizes, 2c. to 2.10c.; Tees, 2.05c. to 2.15c., either random lengths or cut to lengths 5 feet and over.

Plates.—A little ripple of activity seems to have disturbed the otherwise calm surface of the Plate market and inquiries are more active than they have been. There is no doubt, however, that many of these inquiries come from firms who are feeling the market, with a view to locating any soft spots that may have developed in the Plate Association. It is claimed by some factors in the market that the reduction of $2 per ton made on Sheets by the American Sheet & Tin Plate Company last week extends to Plates, but this does not seem to be true except on No. 9 and lighter, which are not covered by the association agreement. On Plates ¼-inch and heavier, 60 inches and narrower, $1 to $2 per ton lower than association prices are being offered by independents, and Universal Mill Plate is understood to be shaded $4 per ton below the Plate Association figures in this market. Association prices are as follows: Tank Steel, ¼-inch and heavier, 1.76½c.; Flange Steel, 1.86½c.; Marine, 1.96½c.; Universal Mill Plate, 1.76½c. to 1.81½c.; 3-16 Tank, 1.86½c.; Nos. 7 and 8, 1.96½c. to 2.01½c. Lighter than No. 8, prices have been reduced sharply, No. 10 Tank going as low as 1.76½c. and Nos. 11 and 12 at 1.86½c. Tank Steel from store, ¼-inch and heavier, 100 inches wide and less, is unchanged as yet at 2c. to 2.10c., 3-16 at 2.10c. to 2.15c., No. 8 at 2.10c. to 2.20c., but there is a likelihood that these prices may be reduced in line with the $2 reduction on Sheets from store which is about to go into effect. Flange quality Steel retains its 25c. premium over Tank.

Sheets.—Last week the American Sheet & Tin Plate Company announced a reduction of $2 per ton on both Black and Galvanized Sheets clear down the list, but reserved the right to quote the former prices where specification and deliveries were not to their liking. It is difficult to say just what this makes their reduced price, as there has been no fixed scale of prices on Sheets made by that firm for a long time. It seems to be true that all Sheet mills of the country are filled up with business for the present and are unwilling to tie themselves up to definite deliveries beyond July 1, owing to the approach of their annual shut down and partly to the fact that there is a possibility of an extended dispute between the employers and mill operatives before a new wage scale is adopted. The impression seems to prevail that this $2 reduction made by the leading producer only brings them down to the current market quotations as fixed in this column last week for Blue Annealed Sheets, 16 gauge and heavier, which we repeat, as follows: One Pass Cold Rolled Blue Annealed, Nos. 9 and 10, 1.76½c.; Nos. 11 and 12, 1.86½c.; Nos. 13 and 14, 1.91½c.; Nos. 15 and 16, 2.01½c. On One Pass Cold Rolled Box Annealed Sheets, 18 gauge and lighter, the following prices seem to prevail: Nos. 18 and 20, 2.06½c. to 2.11½c.; Nos. 22 and 24, 2.11½c. to 2.16½c.; No. 26, 2.16½c. to 2.21½c.; No. 27, 2.21½c. to 2.26½c.; No. 28, 2.31½c. to 2.36½c.; No. 29, 2.46½c. to 2.51½c.; No. 30, 2.56½c. to 2.61½c. Store prices are unchanged at this writing, though it is proposed to reduce store prices $1 per ton as soon as the local warehousemen can get together and agree upon the reduction. We, therefore, repeat last week's figures, with the caution that by the time this reaches our readers prices may have been reduced 10c. per 100 lbs.: No. 8, 2.10c. to 2.20c.; No. 10, 2.15c. to 2.25c.; No. 12, 2.20c. to 2.30c.; No. 14, 2.25c. to 2.35c.; No. 16, 2.30c. to 2.40c.; Nos. 18 and 20, 2.40c. to 2.45c.; No. 22, 2.45c. to 2.50c.; No. 24, 2.50c. to 2.55c.; No. 26, 2.60c.; No. 27, 2.70c.; No. 28, 2.80c.; No. 29, 2.95c.; No. 30, 3.10c. Galvanized Sheets are being sold from some stocks in Chicago at about the same figure quoted by some mills at or near Pittsburgh, with the differential in the most favorable cases not sufficient to pay the freight and leave a profit to the jobber; 75, 10 and 5 and 75, 10 and 7½ are being freely quoted for shipment from stock, while railroads are able to buy at still better discounts. Mill quotations range from 80 to 80 and 10

per cent. discount at mill. There is no fixed agreement between Chicago warehousemen as to their prices on the lighter gauges of Black Sheets, and there is also an understanding that the railroad field is an open field without agreement restrictions as to prices. The situation is very much involved at the present moment, but will doubtless be clarified by next week.

Bars.—The price of Bar Iron in the Chicago market is 1.30c. to 1.35c., base, half extras, in carload lots, with the bulk of the current business going at 1.32½c. and 1.35c., the price of 1.30c. being quoted only where business is exceptionally desirable or in the presence of keen competition. Steel Bars and Bands are still held at the association price of 1.35c., base, half extras, f.o.b. mill, which makes them 1.51½c., Chicago. This price is being shaded $1 to $2 per ton by the International Harvester Company and one or two independent producers. Hoops remain unchanged, nominally at least, at 1.56½c. rates, full extras, carload lots. Store prices are unchanged, as follows: Iron Bars, 1.75c., base, full extras; Steel Bars, 1.70c. to 1.80c., base, half extras; Hoops, 2.10c. rates, full extras.

Merchant Steel.—Little business is doing in Tool Steel and such Steels as are used in the machinist and machinery trades in the city of Chicago, owing to the machinists' strike now in force. Implement concerns outside of the city continue to order a fair tonnage for their current needs, which, however, are naturally light at this late season. Prices remain unchanged, as follows: Open Hearth Spring Steel to the general trade, 2c. to 2.25c.; Smooth Finished Machinery Steel, 1.76½c. to 1.81½c.; Smooth Finished Tire, 1.71½c. to 1.76½c.; Sleigh Shoe, flat, 1.56½c. to 1.61½c.; Sleigh Shoe, concave and convex, 1.66½c. to 1.71½c.; Cutter Shoe, 2.25c. to 2.35c.; Toe Calk Steel, 2.06½c. to 2.11½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots.

Merchant Pipe.—Business is fairly brisk, and both the leading producer and independents express themselves as well satisfied with the new business that comes in day by day as well as the manner in which customers are specifying against contracts. Prices are unchanged, as follows:

	Steel Pipe.		Guar. Wr'ght Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
⅛ to ¾ inch	67.35	57.35	64.35	54.35
½ inch	70.35	60.35	67.35	57.35
¾ to 6 inches	74.35	64.35	71.35	61.35
7 to 12 inches	69.35	59.35	66.35	56.35

Boiler Tubes.—Trade is by no means what it should be, but prices are maintained as follows:

	Steel.	Iron.	Seamless steel.
1 to 1½ inches	43.35	40.80	52.35
1¾ to 2¼ inches	55.85	38.35	40.35
2½ inches	58.35	43.35	43.35
2¾ to 5 inches	64.35	50.85	up to 4 in. 50.85
6 to 13 inches	55.85	38.35	....

Leading warehousemen here report that their warehouse trade on Tubes is rather better than they should expect under present conditions. Prices are unchanged, as follows:

	Steel.	Iron.	Seamless steel.
1 to 1½ inches	40	35	37½
1¾ to 2½ inches	50	32½	35
2¾ to 5 inches	60	45	45
6 inches and larger	50	32½	..

Cast Iron Pipe.—No sales of any magnitude have been closed during the week under review. Prices are sagging, with $25.50 the maximum for 4-inch Water Pipe and $24.50 for 6-inch and heavier, and $1 extra for Gas Pipe. Inquiries for 500 to 1000 ton lots would develop lower prices than these.

Old Materials.—There is not enough business being done to make a market on Old Materials in general. In most of the lines quoted below the figures must be taken as nominal, being virtually the mean between the ideas of the buyer and seller rather than representing transactions of any moment. In general the feeling is that our prices are rather high than otherwise, but that should a buying movement develop they would soon be too low. We reduce Heavy Relaying Rails $1, Old Car Wheels 50c., and advance Heavy Cast Scrap 50c., on the basis of actual transactions. We quote as follows, carload lots, per gross ton, Chicago:

Old Iron Rails	$14.50 to $15.00
Old Steel Rails, 4 feet and over	11.00 to 11.50
Old Steel Rails, less than 4 feet	9.50 to 10.00
Heavy Relaying Rails, subject to inspection	22.00 to 23.00
Heavy Relaying Rails, for side tracks	18.00 to 20.00
Old Car Wheels	11.00 to 11.50
Heavy Melting Steel Scrap	9.50 to 10.00
Mixed Steel	8.50 to 9.00

The following quotations are per net ton:

Iron Fish Plates	$12.00 to $12.50
Iron Car Axles	15.00 to 15.50
Steel Car Axles	13.50 to 14.00
No. 1 Railroad Wrought	10.50 to 11.00
No. 2 Railroad Wrought	9.00 to 9.50
Shafting	12.50 to 13.00
No. 1 Dealers' Forge	8.00 to 8.50
Wrought Pipe and Flues	7.50 to 8.00
Iron Axle Turnings	7.00 to 7.50
Soft Steel Axle Turnings	7.00 to 7.50
Machine Shop Turnings	6.50 to 7.00
Cast Borings	3.00 to 3.50
Mixed Borings, &c	3.00 to 3.50
No. 1 Mill	6.00 to 6.50
Country Sheet	5.00 to 5.50
No. 1 Boilers, cut to Sheets and Rings	7.50 to 8.00
Heavy Cast Scrap	8.75 to 9.25
Stove Plate and Light Cast Scrap	7.50 to 8.00
Railroad Malleable	8.25 to 8.75
Agricultural Malleable	7.75 to 8.00

Metals.—The general tone of the Metal market is weaker, with some reductions. Casting Copper is now 12¾c. and Lake 13c. Pig Tin has dropped to from 28c. to 28¼c.; Pig Lead is 10c. lower, being quoted at 4.20c. for 50-ton lots, 4.30c. for car lots and 4.50c. for small lots; Spelter is unchanged at 5.05c. to 5.10c. for car lots and 5.25c. to 5.40c. for small lots; Sheet Zinc has suffered three 10c. reductions, being now 5.90c. for car lots of 600-lb. casks and 6.15c. to 6.20c. for less than car lots. Old Metals are weak, with reductions in Heavy Copper and Copper Clips and Red Brass. We quote: Copper Wire and Heavy, 10¾c. to 10⅞c.; Copper Bottoms, 9¾c.; Copper Clips, 10¾c.; Red Brass, 9⅝c.; Red Brass Borings, 8c.; Yellow Brass, Heavy, 7½c.; Yellow Brass Borings, 6c.; Light Brass, 5⅝c.; Tea Lead, 3½c.; Zinc, 3.75c.; Pewter, No. 1, 17½c.; Block Tin Pipe, 22c.

Coke.—Seventy-two-Hour Foundry Coke has been sold in Chicago within the last few days at $3.50 per ton, indicating that sellers were taking a loss to avoid demurrage. Furnace Coke went at the same price, but the tonnage of demurrage Coke is steadily decreasing, and contracts for future delivery are being placed at from $1.90 to $2.25 per ton at the ovens. For a delivered price add $2.65 for Connellsville New River and Pocahontas and $2.25 for Stonega and other Wise County, Va., Cokes.

Philadelphia.

FORREST BUILDING, June 14, 1904.

A duller week in the Iron trade has not been experienced since time out of mind. There has been almost no demand at all, and this applies to every article on the list. It is evident, therefore, that there has been no change in prices, because there has been no busines to make new prices, and it would be a mere guess to say that there will be a change in the near future. It cannot be said that the market is dead, because it will wake up sometime, but it certainly is as near dead as it can be. The furnace report of last week confirmed what many had been expecting, and gives additional force to the determination to buy as little as possible pending a more definite outlook in regard to the later months of the year. The real source of the difficulty, however, is that business is being curtailed in every direction. Material is not wanted in any such quantity as appears to have been expected, and even yet there are a great many who cling to the idea that the reaction has about run its course and that it is only a question of a very short time before buyers will again be chasing around for material. It would be very pleasing to find some basis for such opinions, but unfortunately indications are all the other way, and unless all signs fail the next three months will show a smaller consumption of Pig Iron than we have had for several years past. Early in the year estimates were made by leading authorities that consumption during 1904 would be less than 14,000,000 tons, and last week a prominent operator in New York, through one of the city papers, gave 12,000,000 to 14,000,000 tons as his estimate for the year, so that so far as the best trade opinions are concerned 14,000,000 tons may be placed as the maximum consumption for the year. The output for the first five months of the year is known to have been 6,664,362 tons, exclusive of Charcoal Iron, the production of which is about 40,000 tons per month, and average of 1,370,000 tons per month. This would leave 7,150,000 tons to be produced during the remainder of the year, an average of 1,021,000 tons per month, which, compared with the five completed months, would involve a decreased output of, in round numbers, 349,000 tons each of the remaining months during 1904. If these are the carefully considered opinions of the most experienced men in the trade—and they are—the obvious conclusion is that of necessity there will be much lower costs. It is not necessary to argue why they should go lower when they have already declined so much, but the law of supply and demand is supreme, and unless all precedents are reversed decreased dmand will bring decreased costs, in which case selling prices may be very much different to what they are to-day. The same reasoning will apply to finished products, and with such a serious falling off in demand it is hardly probable that prices can be maintained on their present level. It is, perhaps, quite true that lower prices will not increase the demand, but the temptation to cut prices is so great that as a measure of protection a new list may be agreed upon, failing which there will be danger of an open market, which in times like these has always been a more or less demoralized market as regards prices.

Pig Iron.—It is difficult to call to mind a period when there was so little interest in the market as there is to-day.

There have been times when there was as little demand, but during the same period heavy shipments were being made on former purchases, but now the call for deliveries is almost as light as for new purchases, which is about the worst feature possible. When heavy deliveries are being made it is obvious that stocks are not accumulating, and that new purchases are simply a question of time. Present conditions, however, indicate accumulation of stocks which must be promptly offset by decreased production, or there is liable to be a very serious drop in prices. It is singular that in the light of past experience about all that is done to avert the natural consequences is to say that "Iron cannot be made for less money and producers will not sell at a loss." Experience has shown that it is impossible to avert a decline in prices when there is overproduction, so that either of these alternatives are inevitable in the near future. In the meanwhile the needs of consumers are totally out of proportion to the needs of producers, and so long as this continues prices will naturally be weak, with a declining tendency. So far no quotable change in prices can be made, but it requires a very sanguine mind to believe that they can be maintained for any length of time. Costs will unquestionably be reduced, they always have been when the necessity arises, and no one can doubt that the necessity has arisen, although it may take time to demonstrate the fact. Consumers recognize it by buying as little Iron as possible. If the need for material was likely to be greater there would be less hesitation, but as orders are small and uncertain there is nothing to stimulate consumers to increase their lines. Such business as could be had has been done on a nominal basis of $14.75 to $15, delivered, for No. 2 X Foundry, but 10c. to 15c. less has been accepted on the most desirable class of business. Gray Forge is held at $12.75 to $13 for good average qualities, and $13.25 to $13.50 for the best grades; in some cases $13.75 has been paid for favorite brands. A fair average of quotations, taking in both extremes, would be about as follows for Philadelphia and nearby deliveries:

No. 1 X Foundry	$15.25 to $15.50
No. 2 X Foundry	14.50 to 15.00
No. 2 Plain	14.00 to 14.25
Alabama No. 2, rail shipment	13.75 to 14.00
Alabama No. 2, on dock	12.75 to 13.00
Standard Gray Forge	13.25 to 13.50
Ordinary Gray Forge	12.75 to 13.00
Basic	13.75 to 14.00

Steel.—There is quite a good demand for Steel, nothing in large lots, but sufficient small orders to make a very respectable average business. Prices about $24 to $24.50, according to size of order and time for delivery.

Plates.—It is rather discouraging to write a report of the Plate trade and kindred interests, as there is really very little doing beyond the usual routine demand. Prospects for the near future are not encouraging, although the shipyards are figuring on work which may require material soon after midsummer. Several large ferry boats are being bid on, and will probably be taken some time before the end of the month. Prices are unchanged, although reports of cutting are reported on Light Plates, but, as a rule, the following prices are well maintained:

	Carloads. Cents.	Part carloads. Cents.
Tank Steel, ¼-inch and heavier	1.73½	1.78½
Tank Steel 3-16-inch	1.83½	1.88½
Tank Steel, Nos. 7 and 8, B. W. G.	1.88½	1.93½
Tank Steel, Nos. 9 and 10, B. W. G.	1.98½	2.03½
Flange or Boiler Steel	1.83½	1.88½
Commercial Fire Box Steel	1.93½	1.98½
Still Bottom Steel	2.03½	2.08½
Locomotive Fire Box Steel	2.23½	2.28½
Plates over 100 to 110 inches	.05 per lb. extra	
Plates over 110 to 115 inches	.10	"
Plates over 115 to 120 inches	.15	"
Plates over 120 to 125 inches	.25	"
Plates over 125 to 130 inches	.50	"
Plates over 130 inches	1.00	"
All sketches (excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10	"
Complete Circles	.20	"
Shell grade of Steel abandoned.		

Structural Material.—There is just enough day to day demand to enable the mills to hold their own, but the tonnage taken during the past week has not been large. Prices are unchanged, as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—The Bar trade is very dull, and prospects of improvement are by no means encouraging. Prices are maintained, but it is hardly likely that they can be held much longer unless the demand improves, of which there is not much chance for several weeks to come, although in anticipation of an extended holiday at some of the mills, there may be a demand to complete an assortment of sizes. Prices 1.48½c. to 1.55c. for Refined Iron or Soft Steel, and fairly steady considering the dullness.

Sheets.—There is a better demand than there has been for several weeks past, and mills are running to full capacity to meet the call for prompt deliveries. Prospects in this department appear to be better than in most other lines.

Old Material.—The demand shows no improvement and prices show further recession. The present low prices ought to be attractive, but there seems to be no disposition to bid for Scrap at the present time. The following bids and offers fairly represent buyers' and sellers' ideas for deliveries in buyers' yards:

No. 1 Steel Scrap	$11.25 to $11.50
Low Phosphorus Scrap	15.00 to 16.00
Old Steel Axles	15.00 to 16.00
Old Iron Rails	14.50 to 15.00
Old Iron Axles	16.50 to 17.00
Old Car Wheels	11.00 to 11.50
Choice Scrap, R. R. No. 1 Wrought	12.75 to 13.25
Yard Scrap	12.00 to 12.50
Machinery Scrap	11.50 to 12.50
No. 2 Forge Fire Scrap	10.00 to 10.50
No. 2 Forge Fire Scrap (Ordinary)	8.50 to 9.00
Wrought Turnings	8.00 to 8.50
Axle Turnings, Choice Heavy	9.00 to 9.50
Cast Borings	6.25 to 6.50
Stove Plate	9.00 to 9.50
Wrought Iron Pipe	9.50 to 10.50

Cincinnati.

FIFTH AND MAIN STS., June 15, 1904.—(*By Telegraph.*)

Pig Iron.—The market continues quiet, with nothing out of the ordinary transpiring. Business with the foundries and rolling mills is very light, and so far as we are able to learn little new work is being received. In this respect the Eastern shops appear to be much better supplied with orders than those located west of the Alleghany Mountains. At the convention of the American Foundrymen's Association, in Indianapolis last week, the representatives of Eastern shops talked much more encouragingly than those from the West. Northern Iron continues to be held at close to $12, at furnace, and there seems to be no necessity for shading this price, so far as Southern competition is concerned, unless the latter product goes to $8.50 or less. The South cannot compete with the North in any of the lake markets except Chicago, at least not until Southern prices slip off another 50c. In spite of the present weakness, the increased stocks shown in May and the light demand, we do not anticipate lower prices in Pig Iron and believe the cost line has already been reached. Some slight reduction in cost may be made by Southern producers after July, but this will probably not come in time to prevent a decline in stocks in furnace yards by the end of June. The trouble appears to be lack of confidence on the part of selling agents, and the natural desire to take business will, we think, soon overcome this. Among the inquiries for the week we mention the following: International Steam Pump Company are in the market for 1000 tons of mixed grades, Cincinnati and Buffalo delivery; 2000 tons or more Southern Gray Forge, for third quarter delivery, for National Tube Company, Pittsburgh. One agent reports a sale of 1500 tons of No. 2 Foundry for June and July delivery on a $9.25, Birmingham, basis, delivery to be in Southern territory. The American Bridge Company bought 700 tons of Southern Nos. 2 and 4, St. Louis delivery, on a $9 basis for No. 2 and $8.40 basis for No. 4, Birmingham. There is a fair sprinkling of orders being received in from 50 to 300 ton lots, and inquiry is quite a little better than for some time past. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$12.25 to $12.50
Southern Coke, No. 2	11.75 to 12.00
Southern Coke, No. 3	11.25 to 11.50
Southern Coke, No. 4	11.00 to 11.25
Southern Coke, No. 1 Soft	12.25 to 12.50
Southern Coke, No. 2 Soft	11.75 to 12.00
Southern Coke, Grag Forge	10.75 to 11.00
Southern Coke, Mottled	10.50 to 10.75
Ohio Silvery, No. 1	15.65 to 16.15
Lake Superior Coke, No. 1	13.15 to 13.65
Lake Superior Coke, No. 2	12.65 to 13.15
Lake Superior Coke, No. 3	12.15 to 12.65
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	$16.25 to $16.75
Lake Superior Car Wheel and Malleable	15.80 to 16.30

Coke.—Coke continues in very light demand, with prices practically unchanged. It is reported that several of the leading interests are talking of shutting down their plants until conditions improve. There is already a heavy falling off in production in the Connellsville district. Nominal prices of the best brands of 72-hour Coke from all districts are about $1.75 to $2.

Plates and Bars.—There is a little more demand for Finished Material, and the tone of the market is developing a shade more strength. Prices are firm and unchanged. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.40c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.48c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 2c.; Sheets, 16-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.68c., in carload lots.

Old Material.—There is no change in the situation, and

very little movement is noted. Trade is quiet, and it is apparently very hard to awaken any interest. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $11 to $11.50 per net ton; No. 1 Cast Scrap, $9.25 per net ton; Iron Rails, $14.50 per gross ton; Steel Rails, rolling mill lengths, $11 to $11.50 per gross ton; Iron Axles, $15 per net ton; Car Wheels, $11 to $11.50 per gross ton; Heavy Melting Scrap, $11.50 per gross ton; Low Phosphorus Scrap, $11.50 to $12 per gross ton.

Cleveland.

CLEVELAND, OHIO, June 14, 1904.

Iron Ore.—The Ore producers are making no sales. The furnaces seem to have enough of every grade on hand for immediate use and are not anxious about their future supply. The dullness does not seem to be a matter of price. It is now generally conceded that this year's prices will be about $3.25 for Bessemer Old Range, $2.85 for Non-Bessemer Old Range, $3 for Bessemer Mesaba and $2.75 for Non-Bessemer Mesaba.

Pig Iron.—Buyers are taking Foundry Iron at the present time only as there is an immediate need for it. Sales agents, however, report that all through this territory the supply of Iron is very low. After inventory time, July 1, a big buying movement is expected. There have been reports of further cuts in the price of Pig Iron, some statements having been made that $12 had been accepted for No. 2 Foundry. It seems, however, as if this was without foundation, as the lowest price which has been heard of is $12.25, in the Valleys, with most of the furnaces holding for $12.50. The market for Bessemer and Basic is quiet and the prices which are quoted are purely nominal. There is a fair call for Malleable Pig Iron, but it is not very strong, the price ruling about $12.25 to $12.50. The Coke situation has not changed materially. Prices are steady and unchanged. We quote Pig Iron prices, f.o.b. cars Cleveland, as follows:

Northern Coke, No. 1 Foundry	$13.75 to $14.00
Northern Coke, No. 2 Foundry	13.25 to 13.50
Northern Coke, No. 3 Foundry	12.75 to 13.00
Southern Coke, No. 1 Foundry	13.85 to 14.10
Southern Coke, No. 2 Foundry	13.35 to 13.60
Southern Coke, No. 1 Soft	13.85 to 14.10
Southern Coke, No. 1 Soft	13.35 to 13.60
Jackson County, 8 per cent. Silicon	.... to 16.45
Hanging Rock Charcoal, No. 1	.... to 23.45
Southern Charcoal, No. 1	.... to 17.85
Lake Superior Charcoal	16.50 to 17.00

Finished Iron and Steel.—Prices have held steady, and the demand has been slightly better. Inquiries have been stronger, and for a time it looked as if a buying movement such as has been expected had come. It developed, however, only into a hand to mouth buying movement, which took in a little wider range of materials. The talk has been of late that there have been cuts in Billets, and that orders have been going to the smaller and so-called independent mills on that account, but it seems that there is no great volume of business moving at any price. There has been a little better inquiry for Structural Steel. One big building is in prospect, but in the main the buying has been light. The material for this building is under inquiry, and will be placed soon. The structure is to be erected by the Guardian Trust Company. Nothing is being done in Rails, and the Plate trade is waiting developments. Shipbuilding being dull, the power back of the Plate trade has been removed, while the boiler makers are depending a great deal upon export business upon which they have figured, but have not received any big contracts. Prices for Sheets in car lots at the mill have been shaded somewhat. No. 27 Black Sheets are selling at 2.10c. to 2.15c., while it is generally believed that a good specification could be placed at 2.05c., at the mill. Black Sheets out of stock have held unchanged on the basis of 2.50c. for No. 27. Galvanized Sheets are a little weak and the trade has been dull. Prices are quoted, out of stock, for Nos. 16 to 20, 75, 10 and 5 off list, and for No. 22 and lighter, 75, 10 and 7½ off list. The Bar situation is easier, but the Bar Iron mills having only two weeks yet to run are not looking for new business, and have specifications on old contracts to keep them busy. The trade in Steel Bars is dull since the agricultural implement works are not doing much, and will not be in the market until after July 1 for next year's contracts.

Old Material.—The Scrap market has been dull, with free offerings and a light demand. Most prices are nominal, but we revise and quote as approximating the market as follows, all gross tons: Old Steel Rails, $12; Old Car Wheels, $12; Heavy Melting Steel, $11. All net tons: Cast Borings, $4 to $4.50; No. 1 Busheling, $10 to $11; No. 1 Railroad Wrought, $11.50 to $12; Wrought Turnings, $6 to $6.50; Iron Car Axles (nominal), $16 to $17; No. 1 Cast, $10.50 to $11; Stove Plate, $8 to $8.50.

The James Reilly Repair & Supply Company, New York, have incorporated their business, with a capital stock of $1,000,000. The company are considering the erection of new shops at Jersey City, N. J.

Birmingham.

BIRMINGHAM, ALA., June 12, 1904.

The Iron market, in so far as prices are concerned, showed the past week about the same condition as has been reported of late. But there was a materially better inquiry, that was followed by an increased demand. The market is yet well supplied with gossip, and rumors that can't be verified are as plentiful as blackberries. The larger buyers are coming in, but not in squadrons or companies. Just the advance have made their presence known, but their number is gradually increasing and the army of buyers so long looked for, it is believed, is now advancing to purchase its requirements.

Some good round lots were taken the past week, one of them covering in the neghborhood of 12,000 tons, while there were other lots sold in amounts of 2000 tons down to carloads. To get at the prices obtained has been a job, and one not very satisfactory to the gleaner of news. But the prices here given are those as stated by the sellers, and some of them were submitted, for corroboration of assertion, to your correspondent. The large order covered two grades and the seller states that the order was filled on the basis of $8.50 for Gray Forge, which would be on a basis of $9.50 for No. 2 Foundry. There were other orders accepted on the same basis, covering in magnitude the statement above. The various orders, in delivery, extended up to and, in some cases, through August. In a limited way some No. 2 Foundry sold at $9.75 and some also sold at $9.50, with some at $9.75. The most of these sales were orders by due course of mail.

There was a sale of 1500 tons of No. 4 Foundry at $8.50, and one of 300 tons of No. 2 Soft, carrying 3 per cent. silicon, that secured $10, the top price for the week. No. 2 Soft sold in a regular way at $9.50. Some interests refuse to price or sell on any less basis than $9.50 for No. 2 Foundry, although they know that sales are being made at 25c. less. In varying lots one interest has sold in the past ten days over 3000 tons on the basis of $9.25 for No. 2 Foundry, while another reports sales of over 2000 tons, in lots from 500 tons down to car lots, on the same basis. Add to this the fact that another interest sold Gray Forge at $8.75 and one can get a pretty fair idea of the market variations, without being able to satisfactorily account for them. There were rumors of sales on the basis of $9 for No. 2 Foundry, but your correspondent utterly failed to locate the seller. No one charged with the sales would admit making them. As to Basic Iron, there were no transactions reported. In No. 3 Foundry there were a few sales, some at as high as $9, the largest one reported in volume being 200 tons, excluding the amount covered in the large sale. As reported last week, the larger interests are the firmest holders.

There was some more export business concluded during the week, covering 500 tons in one case, with rumor of an equal amount by another interest. It is given out that these sales were made on the basis of $8.50 for Gray Forge. Both lots were for prompt and nearby shipment.

The United Order of Mine Workers convene to-day in annual convention to formulate the terms for a wage scale for the ensuing year, commencing on July 1. It is not definitely known on what basis the new schedule will be based, but it is very evident that the old scale will be modified and in some points reconstructed. The operators are without organization this time, and their policy seems to be to let each interest make its own terms with the miners. It is very evident that both sides are getting tired of the annual wrangle over the wage scale and would be willing to lengthen the time of agreement. Just now it looks as if any concessions made will be on the part of the miners.

The Means-Fulton Iron Company have changed owners, the purchasers being parties who control and own the Portsmouth Machine & Foundry Company, Portsmouth, Ohio. The business will be conducted on the old lines, but materially enlarged. A part, if not all, of the machinery of the Ohio plant will be moved to this point.

Among the companies incorporated the past week were the Bartlett-Tewksbery Machine Company, capitalized at $25,000, located at East Birmingham, to make a specialty of saw mill machines and engines. The officials are T. E. E. Bartlett president, S. F. Young vice-president and J. W. Tewksbery treasurer.

The most of the Coal interests have had a steady and satisfactory output of late, as many buyers have been laying in stock to provide against any deadlock that may occur between the operators and miners in the fixing of a satisfactory scale of wages. There is a revival of interest in the gold fields east of us, and some money has been supplied for development.

The report of the secretary of the Commercial Club for the year ending in May shows that the capital stock authorized to new corporations was $3,847,500; the capital stock of old corporations was increased $883,000; for extraordinary improvements, new developments, &c., the sum of $9,098,698 was paid out; for railroad construction, $1,438,000; for municipal improvements $452,793 was expended; for new buildings $2,514,400 was paid out. The grand total for

the year was $18,233,191. All these items represent an actual local cash investment at face value, except, perhaps, the first two items, which are supposed to carry some water in their valuations. The bank clearings were over $63,000,000, and the bank deposits were approximately $13,000,000. Since the last census over 7500 houses have been built in Birmingham, and more are being built every week. This extract from the balance sheet of our progress ought to convince the most skeptical that we are moving in accord with the march of enterprise.

Pittsburgh.

PARK BUILDING, June 15, 1904.—(*By Telegraph.*)

Pig Iron.—There is more inquiry in the market for Pig Iron, especially for Basic and Foundry, and we note one sale of 500 tons of No. 2 Northern Foundry at $11.90, Valley furnace, or $12.75, Pittsburgh. This is the lowest price yet reached for Foundry Iron, as most of the Valley furnaces are quoting $12 to $12.15, at furnace. Several inquiries are in the market for Basic Iron, one for 1000 tons and another for 2000 tons, and on these the Valley furnaces are quoting $12, at furnace, or $12.85, Pittsburgh. It is possible that on a firm offer for Basic Iron for prompt shipment it might be bought at a little less than $12, at Valley furnace, but in such case the buyer would have to take the Iron promptly, as the furnaces are anxious to sell for spot shipment. There is not much doing in Bessemer Iron, which is held at $12, at Valley furnace, but on a very firm offer and for prompt shipment this price might be slightly shaded. Northern Forge Iron has settled down to $11.50, Valley furnace, or $12.35, Pittsburgh; but, like Bessemer and Foundry, Forge Iron is weak and $11.50, at Valley furnace, might be shaded 10c. or 15c. a ton on a firm offer and for spot shipment. The large restriction in output of Pig Iron, which will come with the shutting down of a number of furnaces in the near future, ought to have the effect of strengthening prices, which at present are weak.

Steel.—There is not much doing in the Steel market, as consumers are covered by contracts. A local mill reports sales of several small lots of Bessemer and Open Hearth Billets and also of Sheet Bars at regular official prices. The Billet meeting to be held in New York in July is awaited with much interest, but as to whether official prices of Billets and Bars will be reduced is uncertain. The spread between Bessemer Iron and Billets is so large, being about $9 a ton, that it can hardly be maintained indefinitely.

Shafting.—A meeting of the Shafting Association is being held in the Hollenden, Cleveland, Ohio, to-day (Wednesday), but it is not believed any changes in prices will be made on Shafting, which are on the basis of 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered in base territory. The demand is reported fairly good and we are advised that official prices are being held.

(*By Mail.*)

Extreme dullness continues to prevail in the Iron trade, and so little of interest has occurred in the past week that our last report might be used in this issue and cover the situation very nicely. The two chief causes of the present dull demand in the Iron trade are first, the refusal of the railroads and other large consumers of Iron and Steel to buy except for actual needs, and the weakness in prices, which offer no incentive to buy ahead. There seems to be an utter lack of confidence in the future, and buyers are going as close to shore as they possibly can in the matter of purchases, believing that by holding off they will be able to buy at still lower prices. This may possibly be the right view of the case, but at the same time it is a fact that prices on Iron and Steel of all kinds, with the exception of three or four lines that are controlled by price agreements, are low, and are certainly very close to cost of production. Beginning with Pig Iron, which is cheaper now than at any time for several years, it is doubtful if the best equipped furnaces in the Valley districts and elsewhere can make Bessemer and No. 2 Foundry Iron at $12 a ton, and sell it at a profit. Forge Iron at $11.50 or lower at furnace is certainly very close to the cost of making it, and to some furnaces it is below cost. The official prices on Billets and Sheet Bars are out of joint with the rest of the market, but so little Steel is sold at these official prices that it really cuts very little figure in the market. Structural Steel and Plates at 1.60c. are high compared with other forms of Finished Iron and Steel, but these prices are maintained only because of agreements among the mills. In the case of Plates there is some shading going on, and it is possible that at the meeting of the Plate Association in July there may be a reduction in the official price. Steel Bars, which are also controlled by price agreements, are not high at 1.35c., but would undoubtedly have been much lower had it not been for the price agreement among the mills, which has held the price of Bars very firmly. Other Materials, such as Sheets, Iron Bars, Merchant Steel, Pipes and Tubes, are low in price compared with cost of Steel. However, as long as buying is at its present low ebb, no betterment in prices can be expected, and it is possible they may go lower. It is a fact that buying has not been as dull in the Iron trade in the last few years as it is now.

A statement sent out by J. G. Butler, Jr., of the Bessemer Furnace Association, shows that on June 1 20 per cent. of the blast furnaces tributary to the Lake Superior Ore region were out of blast, or, to be more specific, 119 furnaces were in blast and 43 out of blast. It is probable that the statement for July 1 will show 30 per cent. or more of the furnaces out of blast. McKeefrey Furnace of the Cherry Valley Iron Company, at Leetonia, will probably go out this week, and Fannie, at West Middlesex, will not resume as expected. Four or five stacks in the two Valleys will blow out within the next week, and a heavy curtailment in production of Pig Iron is certain this month. The large Steel interests are commencing to pile metal, and unless the demand for Steel soon picks up, they will also have to cut down Pig Iron output.

Prices during the week have shown no material change, with the exception of Pig Iron, which is lower, and Sheets, which have also declined slightly.

Ferromanganese.—A sale of 50 tons of English Ferro is reported at about $41.50, delivered. Some very low prices are being made on English Ferro for delivery at points near tidewater. We quote English and domestic Ferro at $41 to $42, delivered, depending on the tonnage.

Muck Bar.—We do not hear of any sales, and quote best grades of domestic Muck Bar made from all Pig Iron at $24 to $24.50, delivered.

Wire Rods.—The Rod market is very quiet and prices are weaker. Bessemer and Open Hearth Rods are held at $29 to $29.50, Pittsburgh. On a firm offer and for any considerable tonnage these prices might be shaded.

Skelp.—There is some inquiry for Grooved Steel and Sheared Iron Skelp, but prices seem to be a little lower. We quote Grooved Iron Skelp at 1.42½c. to 1.45c.; Sheared, 1.47½c. to 1.50c., and Grooved and Sheared Steel Skelp at 1.35c., Pittsburgh.

Steel Rails.—Orders continue to be placed for only small lots, and some of the Rail mills are getting short of work. We quote at $28 at mill for Standard Sections, the mills equalizing freights. Light Rails, 30 to 45 lb., are $21 to $21.50, maker's mill.

Structural Material.—The Structural trade has been quiet in the past week and no large contracts have been placed. A good deal of bridge work is in sight, but it is very slow in developing. Some large jobs are coming up in this district, among these the Wabash viaduct, which will likely be placed this week and will take about 2500 tons. The South Side Terminal warehouses will probably be placed before long. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

Plates.—Interest attaches to the meeting of the Plate Association to be held in New York early in July. Opinion is divided as to whether there will be a reduction in the official price of 1.60c. It is claimed that concessions in Plates are being made and by mills in the association, but this is not verified. On narrow sizes of Plates up to ¼-inch thick, that can be rolled by outside mills, some relatively low prices are being made. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, A. B., M. A., and ordinary Fire Box, 1.80c.; Still Bottom, 1.90c.; Locomotive Fire Box, not less than 2.10c., and up to 3c.; Plates over 100 inches to 110 inches in width, not less than 5c. per 100 lbs. extra; Plates over 110 inches to 115 inches wide, not less than 10c. extra; Plates over 120 inches to 125 inches wide, not less than 25c. extra; Plates over 125 inches to 130 inches wide, not less than 50c. extra; Plates over 130 inches wide, not less than $1 extra; Plates 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. Above prices are on carload lots, f.o.b. at mill, Pittsburgh, with 5c. extra for less than carload lots; terms, net cash in 30 days, and for all points of delivery in the United States except the Pacific Coast.

Sheets.—The Sheet trade is rather quiet and prices, on the whole, are weaker. It was confidently expected that demand for Sheets would show improvement this month, especially for Stove Pipe sizes, but so far this has not materialized, but on the contrary demand is quieter. We quote Black Sheets, box annealed, one pass through cold rolls, as follows: No. 26, 2c.; No. 27, 2.05c.; No. 28, 2.15c. On desirable orders these prices would be shaded by some mills about $1 a ton. Galvanized Sheets are sightly lower and are selling at about 80 and 7½ per cent. off. In net prices this discount figures out as follows: Nos. 22 and 24, Galvanized Sheets, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.14c. All above prices are for carloads and larger lots, jobbers charging the usual advances for small lots from store.

Iron and Steel Bars.—Tonnage in both Iron and Steel Bars is light, and falls far short of being large enough to give the Bar mills full work. Some of the car interests have placed fair sized orders recently, but buyers, as a rule, are placing contracts only for actual needs. We quote Iron Bars at 1.35c., Pittsburgh, but as noted last week this

would be shaded on good sized tonnage and desirable sizes. The mills in the Steel Bar agreement all claim to be holding official prices rigidly. We quote Steel Bars at 1.35c., Pittsburgh, in carloads and larger lots, with the usual differential for less than carloads. On Open Hearth Bars $1 a ton advance is charged.

Hoops and Bands.—The three leading Hoop mills have advanced prices $3 a ton, and we now quote at 1.55c., and Steel Bands at 1.35c., extras as per Steel card.

Merchant Pipe.—Demand for Tubular goods is probably more active than any of the other finished lines and the Pipe mills are all fairly busy, but could handle more tonnage if they had it. Demand for 6-inch and larger sizes of Pipe promises to be very heavy this year, as a good deal of tonnage is in sight. Prices in the main are firm, but are occasionally shaded, especially on Steel Pipe. The independent Pipe mills are working very closely together in the matter of sustaining prices. Consumers' discounts for carload lots, but which are sometimes slightly shaded, more especially by the jobbers, are as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
⅛, ¼ and ⅜ inch	69	59	66	56
½ inch	72	62	69	59
¾ to 6 inches	76	66	73	63
7 to 12 inches	71	61	68	58
Extra strong, plain ends, ⅛ to 8 inches	68	58	64	54
Double extra strong, plain ends, ⅛ to 8 inches	60	50	56	46

Boiler Tubes.—Demand for Boiler Tubes is very dull, especially from the railroads, which are placing very little tonnage. There is more or less cutting in prices, owing to dull demand. Consumers' discounts in carloads, which are being shaded more or less, are as follows:

Boiler Tubes.

	Steel.	Iron.
1 to 1½ inches	42½	39
1¾ to 2¼ inches	55½	38
2½ inches	58	43
2¾ to 5 inches	64½	50½
6 to 13 inches	55½	38

Merchant Steel.—Demand is very dull. The small tonnage being placed is a distinct disappointment to the mills, which looked for a better business in this month than in May. Tool Steel especially is very dull in demand. We quote: Plow Slabs, ¾ inch and heavier, 1.60c.; Tire Steel, 1.55c. to 1.60c.; Sleigh Shoe, flat, 1.40c. to 1.45c.; Cutter Shoes, 2.05c. to 2.10c.; Plow Steel, 6 inches and under, 1.35c.; Toe Calk Steel, 1.85c. to 1.90c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 12c. and upward for special grades. Shafting is 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered.

Spelter.—The market is very quiet, demand being for small lots only, and prices are weaker. Prime Western Spelter is held at 4.55c. to 4.60c., St. Louis, or 4.68½c. to 4.73½c., Pittsburgh.

Tin Plate.—New demand for Tin Plate has quieted down a good deal, as the large consumers are pretty well covered. The mills are running full on contract, which will take several months yet to fill. We quote 100-lb. Cokes at $3.40 per box, Pittsburgh.

Iron and Steel Scrap.—There is absolutely nothing doing in the Scrap market and in the absence of sales it is useless to quote prices. Heavy Melting Scrap has been offered as low as $11 a ton, without finding buyers.

Coke.—Output and shipments of Coke showed a large falling off last week and will probably show a still heavier reduction this week, as a good many blast furnaces have gone out and others are preparing to follow. Strictly Connellsville Furnace Coke is openly quoted at $1.45 a ton, with reports that $1.40 has been done for prompt shipment. Seventy-two-hour Foundry Coke is held at $1.90 to $2 to consumers.

Fire, believed to be of incendiary origin, completely destroyed the building known as Machinery Hall at 54 to 60 Canal street, Chicago, June 8. The total loss to building and contents is roughly estimated at about $500,000, which is divided among the following: A. M. Castle & Co., Grafton & Knight, Charles G. Stevens & Co., John B. Lukanitsch & Co., Union Drawn Steel Company, New York Safety Steam Power Company, James & Foote Company, American Hoist & Derrick Company, Orr & Sembower, Maypole Brothers and A. M. Holland. All have secured temporary offices in nearby buildings.

The molders in the foundry of the American Steel Foundries, at Sharon, Pa., have been given an advance of 10 per cent. in wages. The men went out on strike last week, demanding a restoration of the 10 per cent. cut made in their wages last December. This has been acceded to, and the men have returned to work.

The New York Machinery Market.

NEW YORK, June 15, 1904.

Probably the most interesting proposition which came up before the machine tool trade during the week under review is the list issued by the Illinois Central Railroad Company. The list comprises some 32 tools of various types, some of which are rather heavy. The tools are required for the company's shops at Memphis, Tenn., and they will be purchased through D. W. Ross, purchasing agent, Park row, Chicago.

The company have placed a contract with the George B. Swift Construction Company, Chicago, for erecting the buildings, which will consist of a blacksmith and boiler shop, 80 x 220 feet; a machine shop, 110 x 120 feet, and a transfer pit, 32 x 110 feet. These buildings are in addition to the plant already installed at Memphis. The buildings will be of brick, mill construction, one story in hight. Machinery from the old boiler and machine shop will be transferred to the new shops, but in addition thereto the following machines will be purchased: One 90-inch driving wheel lathe, double quartering attachment; one 6-foot radial drill (Universal); one 90-inch driving wheel press (300 tons); one 42-inch steel tired wheel lathe; one No. 2½ horizontal boring machine; two 51-inch boring machines with two heads; one No. 3 Universal milling machine; one 26-inch crank shaper; two 16-inch slotters; two 36 inch by 36 inch by 12 foot planers with two heads; one 30 inch by 30 inch by 10 foot planer; two 2 inch by 24 inch flat turret lathes; one Whiton double centering machine; one 36-inch engine lathe, 7 feet between centers; one 30-inch engine lathe, 6 feet between centers, taper attachment; one 24-inch engine lathe, 6 feet between centers, hollow spindles; one 22-inch engine lathe, 3 feet between centers, hollow spindles; one 20-inch tool room lathe with taper attachment; one guide grinder; one single punch and shearing machine, 1¾-inch hole in 1¼-inch plate, 24-inch throat; two single punch and shearing machines, 30-inch throat to punch 1¼-inch hole in 1-inch plate; one 44-inch vertical drill press; one pair bending rolls, ¾ x 78 inch plate; one steam hammer, 2500 pounds; one automatic knife grinder; one No. 141 shaper, drop table; one swing cut-off saw, 10-foot table.

The Atchison, Topeka & Santa Fé Railroad have placed orders for a majority of machinery for their shops at Albuquerque, New Mexico; La Junta, Col., and a comparatively small portion for other shops along the line, the list of which was published in these columns on June 2. The orders placed were pretty widely scattered, and the major portion of the machine tool equipment is still to be purchased. The following were the successful bidders:

Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, item 529, one 24-inch engine lathe; item 530, one 20-inch engine lathe.

Niles-Bement-Pond Company, New York, item 528, one 32-inch engine lathe; item 533, 36 x 36 inch planer; item 535, 50-inch horizontal boring machine, 3¼-inch bar; item 539, surface grinding machine to grind 80 inches in length; item 543, horizontal boiler plate bending rolls 10 feet between housings, capacity ½-inch plate motor drives; item 574, one 42-inch vertical car wheel borer, with cranes.

Manning, Maxwell & Moore, New York, item 558, one large sized automatic railway cutting-off saw; item 560, one 38-inch band saw to cut from 16 to 18 inches high; item 562, one tenoning machine; item 563, one 30-inch pattern makers' lathe, with 12-foot bed; item 567, one automatic saw sharpening machine; item 570, one band saw filing machine; item 571, one band saw setting machine.

American Machine & Tool Company, Boston, Mass., item 531, one 20-inch Monitor turret lathe.

Jones & Lamson Machine Company, Springfield, Vt., item 532, one 2 x 24 inch flat turret lathe with locomotive outfit.

Berlin Machine Works, Beloit, Wis., item 551, one large endless bed timber planer; 552, one dimensions planer to plane about 24 inches thick, and to have about 20-foot table; 553, one four-head inside molding machine; 554, one outside molding machine; 556, one 24-inch hand planer and jointer; 557, one double spindle wood shaper; 568, one automatic planer knife grinder to grind knives 36 inches long.

Greenlee Bros. Company, Chicago, Ill., item 545, one automatic railway cutting-off saw 36 inches in diameter; 555, one large automatic car gaining machine with vertical boring attachments; 559, one large sized car ripping saw; 565, one horizontal hollow chisel mortising machine without boring attachment; 546, general purpose rip saw table; 566, one combination sash relisher and mortiser.

Hendey Machine Company, Torrington, Conn., item 534, one pillar shaper, 24-inch stroke.

Fosdick Machine Tool Company, Cincinnati, Ohio, item 537, universal radial drill, 6-foot arm.

Acme Machinery Company, Cleveland, Ohio, item 538, one 2-inch double head bolt cutter.

Diamond Machine Company, Providence, R. I., item 540, three-water tool grinders, 2½ to 20 inches.

D. E. Whiton Machine Company, New London, Conn., item 541, two-spindle centering machine, capacity up to 4 inches in diameter.

Ingersoll-Sergeant Drill Company, New York, item 526, one steam driven air compressor, capacity 1500 feet of free air per minute.

Saunders Sons Company, Yonkers, N. Y., item 542, one pipe machine ¼ to 4 inches in diameter.

B. F. Sturtevant Company, Boston, Mass., item 544, one steel pressure blower, 7⅜ inches in diameter; 569, one 50-inch single steel plate planing mill exhauster.

Babcock & Wilcox Company, New York, item 521, three 300 horse-power water tube boilers.

McDowell, Stocker & Co., Chicago, item 561, one Universal rip and cut-off saw.

S. A. Woods Machine Company, Boston, Mass., one four-spindle horizontal car boring machine; 573, one set of Schimer matching heads.

American Wood Working Machinery Company, New York, item 572, one wood trimmer for pattern shop.

Dispatches from the South state that the Mobile, Jackson & Kansas City Railroad are to erect large machine shops, and the citizens of New Albany, Miss., have purchased a tract of land to be donated to the company for that purpose. The road are now building north to Jackson, Tenn., and trains are expected to be running into New Albany by July 1. A. N. Bullitt, Mobile, Ala., is chief engineer. The president, W. D. Stratton, whose offices are at 5 Nassau street, New York, has just returned from the South.

One of the projects which have been followed up closely by the trade for some time has reached the point where orders for considerable equipment can be looked for within a very short time. This machinery is to be installed in the large new plant to be erected by Richey, Brown & Donald, Long Island City, N. Y., who are now preparing the specifications. It will be remembered that very soon after the fire which entirely destroyed their plant the firm secured temporary quarters in several buildings, and, as was noted in these columns last January, they bought quite a large amount of machinery to equip the temporary shops. This equipment will be moved into the new plant, but it will be only a portion of that which will be needed to properly equip the new buildings, which will cover a large area. There will be required a quantity of regular machine tools that are used for ornamental and structural iron work; also some foundry equipment, the principal item of which is a cupola. The machinery is to be electrically driven, and generators and a number of motors will be installed, the power for which will be furnished by 250 horse-power of boilers and engines. They will be in the market for the boilers and other accessories, the engines being the only equipment thus far secured. The firm have purchased the property at Maspeth, just outside of Long Island City, located on the north side of Flushing avenue, between Metropolitan avenue and Grand street, and containing about 6¼ acres. Upon this site, which is 450 feet wide and 700 feet long, they will erect a main building, 60 x 500 feet, and the several smaller buildings which are already on the property are to be remodeled and prepared for manufacturing purposes.

The Cleveland Planer Works, who have installed a plant at 1260 Superior street, Cleveland, announce that they will produce a line of open side planers and special machinery. The open side planers will be built in 30, 36, 42, 48, 54, 60 and 72 inch sizes.

Air compressors, punches and a general line of structural iron machinery will be required by the National Bridge Works, New York, who were recently incorporated with a capital stock of $70,000. This company, who are a reorganization of the National Bridge Company, with main offices at 1123 Broadway, have purchased a large site at Long Island City, where they are to erect a bridge plant, the main building of which will be 100 x 200 feet. It is their intention to equip the works gradually, and it is not likely that any large amount of machinery will be purchased at one time. The company will have ample storage facilities, and, in addition to their bridge work, they will carry a large stock of iron and steel. The incorporators are Theodore J. Foster, Robert Giles, Elliott C. Smith and John J. Guinnane.

The Motor & Mfg. Works Company, Ithaca, N. Y., recently incorporated with a capital stock of $25,000, intend to enlarge the capacity of their plant by adding to the equipment two lathes, one chucking lathe, one milling machine, cupola and other foundry appliances. The plant is to be equipped with water power. The company will manufacture a gasoline engine and a muffler for the explosion from the engine, the invention of David Reid, and already have many orders on hand. The officers and directors are David Reid, president; R. C. Carpenter, vice-president; J. G. Y. Buckholder, secretary and treasurer; D. C. Lee, Edwin Gillett, S. E. Banks and Henry G. Carpenter.

Arrangements have just been completed which will probably result in the installation of a new plant in the vicinity of New York by the recently organized Balanced Cable Crane Company. Through their attorney, S. C. Mastick, Washington Life Building, New York, they have purchased from W. F. Brothers, 1099 Dean street, Brooklyn, all his American, Canadian and European patents on his balanced cable cranes for handling excavated material. The company are preparing for immediate production and further development of the cable cranes which have been successfully used in constructing the Admiralty docks at Davenport, England, and the Cairo Railway bridge across the Zambesi River, in Africa.

The bids opened June 7 for supplies for the navy yards, League Island, Washington and Annapolis, included the following:

Bidder 1. American Hoist & Derrick Company, St. Paul, Minn.
13. Drew Machinery Agency, Manchester, N. H.
42. Fox Bros. & Co., New York.
56. New Jersey Foundry & Machine Company, New York.
57. R. W. Geldart, New York.
64. Motley, Green & Co., New York.
80. Lambert Hoisting Engine Company, Newark, N. J.
87. J. B. Kendall, Washington, D. C.

Class 48. Two hoisting engines complete—Bidder 56, $1531.50; 87, $1575; 42, $1720; 80, $1820; 57, $1994.80; 42, $2000; 1, $2090; 13, $2092; 64, $2175.

Included in the supplies for the League Island and Washington navy yards, Naval Academy, Annapolis, Md., and the naval proving ground, Indian Head, Md., bids for which will be opened June 21, are electric locomotive and other electrical apparatus.

The following awards have been made for machine tools for the various navy yards, bids for which were opened May 24:

Drew Machinery Agency, Manchester, N. H., class 1, one portable hydraulic press of 100 tons capacity, $295.

Manning, Maxwell & Moore, New York, class 3, one 25-inch and 50-inch swing pattern makers' lathe, $770; class 13, one saw bench, $248; class 15, one single surface planer, $296; class 16, one hand planer, $178; class 17, one boring machine, $99.

Fairbanks Company, New York, class 2, one pattern and core box machine, $200.

Geo. F. Blake Mfg. Company, New York, class 4, one duplex hydraulic pressure pump, $1745.

Niles-Bement-Pond Company, New York, class 5, one 18-inch standard pattern engine lathe, $600.

Railway Appliance Company, Chicago, Ill., class 7, one cold saw cutting off machine, direct electrically driven, complete with motor, $1550.

Prentiss Tool & Supply Company, New York, class 8, one hand planer and joiner, $220.

Bentel & Margedant Company, Hamilton, Ohio, class 9, one heavy planer and smoother, $480; class 10, one scroll saw complete, $77.

Geo. W. Place, New York, class 11, one saw bench cut-off, automatic, complete, $230.

Chas. E. Wright Company, New Orange, N. J., class 14, one band saw, 36-inch wheel, complete with belt and countershaft, $167.42.

Montgomery & Co., New York, class 18, one emery grinder, $57.

Falkenau-Sinclair Machine Company, Philadelphia, Pa., class 19, one 3-foot sheet metal power press or brake, electrically driven, with suitable gearing, $975.

Geo. A. Ohl & Co., Newark, N. J., class 20, one wire crimping machine, electrically driven, $849; class 21, one 6-inch by 61 inch triple back geared slip roll forming machine, electrically driven, $900; class 22, one 18-inch slitting shear, $99.

No awards were made for class 6, three pumps complete with engine and motor, capacity 3000 gallons, 3500 gallons and 2000 gallons respectively, and class 12, two saw benches, universal.

The Bessemer plants of the Schoenberger works at Pittsburgh and the Newburgh works at Cleveland of the United States Steel Corporation are about to shut down for general repairs in a few days. It was intended first that this be done at the end of the month, but the work will be undertaken somewhat earlier. The Schoenberger furnace will be banked, while the Cleveland furnace will work up coke and some high phosphorus ores to make basic pig and will then also stop work.

Witherbee, Sherman & Co. of Port Henry, N. Y., have made further contracts for the shipment of high phosphorus low bed magnetite to Antwerp, the total amount thus far sold being about 12,000 to 13,000 tons. It seems probable that additional shipments will be made to Rotterdam.

The Union Iron Works, Bangor, Maine, have refused the demands of their molders for a nine-hour day with a minimum wage of $2.50, and as a result the machinery molders employed by the company went on strike. The company expect to be able to fill the places of the strikers.

New York.

NEW YORK, June 15, 1904.

Pig Iron.—During the week there has been a fair movement, at somewhat lower prices, for Northern Iron, which is now selling on the basis of $13 to $13.25, at furnace, equivalent to $13.75 to $14, at tidewater. Among the sales are one lot of 3000 tons, equally divided between Northern and Southern makers, three lots of 1000 tons each to New England points, and one lot of 2500 tons to an agricultural implement maker in New York State. Melters are giving preference to Northern brands, because deliveries are prompter. We quote Northern No. 1, $14.75 to $15; No. 2 Foundry, $13.75 to $14.25, and Gray Forge, $12.75 to $13. Tennessee and Alabama brands are $12.75 to $13.25 for No. 2 Foundry and $12.25 to $12.75 for No. 3 Foundry.

Steel Rails.—During the past week an Eastern mill has taken an order for 20,000 tons for Gulf delivery in competition with foreign Rails, while a Western mill has secured 10,000 tons for delivery in British Columbia. Standard Sections are quoted $28, at mill, while Light Sections are $21 to $24, at mill, according to weight.

Cast Iron Pipe.—Perth Amboy, N. J., will open bids today for 2000 tons of 24-inch Pipe. As mentioned last week, the Department of Water Supply of New York also opens bids to-day for about 2800 tons. Nothing else of any size has come up in this locality. The demand for small lots is steadily growing lighter, and the very bright prospects of last spring are therefore steadily fading. For the present the foundries are well supplied with work, but manufacturers are becoming somewhat more solicitous regarding the future. Quotations on carloads are continued as before at $28 per gross ton for 6 to 10 inch and $27 for 12-inch upward, at tidewater, but desirable orders are easily placed at lower figures.

Finished Iron and Steel.—The Structural trade is showing a little improvement, but the volume of business is nevertheless far from satisfactory. The building trade in the West, which gave excellent promise in the spring, has been disappointing and very little is coming from that section. Pittsburgh territory is looking considerably better, both as to bridge and building work. Taking all sections, however, not enough business is now coming along to keep the mills even fairly employed. The most important piece of work placed in hand in this vicinity recently was the Arbuckle building, in Brooklyn, which will require something over 1000 tons of Steel. In the Plate trade the most important business in sight is the material for the five new boats for the Staten Island ferry line, for which bids were again opened last week. It is expected that at least one of these boats will be built in a local shipyard, and possibly others may be placed here. They will require in all about 2500 tons for hulls and boilers. General business in Plates has been slightly better with the opening up of more of the shops which had been closed by the boiler makers' strike. Bar Iron is quiet, with some of the mills making slightly lower prices. We quote at tidewater as follows: Beams, Channels, Angles and Zees, 1.74½c. to 2c.; Tees, 1.79½c. to 2c.; Bulb Angles and Deck Beams, 1.84½c. to 2.05c. Sheared Plates in carload lots are 1.74½c. to 1.85c. for Tank, 1.84½c. to 2c. for Flange, 1.94½c. to 2.10c. for Marine and 1.94½c. to 2.50c. for Fire Box, according to specifications. Refined Bar Iron, 1.44½c. to 1.49½c.; Soft Steel Bars, 1.49½c.

Old Material.—While the demand is very light and dealers are doing almost nothing, the railroad companies appear to be able to dispose of considerable quantities of their accumulations of Scrap directly to consumers, but such sales are made at a sacrifice of values. Among the transactions thus reported are 500 tons of No. 1 Wrought and 500 tons of Cast. Export inquiries are being received, but the prices offered are too low to lead to business. Quotations per gross ton, New York and vicinity, are about as follows:

Old Iron Rails	$14.00 to $14.50
Old Steel Rails, long lengths	12.00 to 12.50
Old Steel Rails, short pieces	10.00 to 10.50
Relaying Rails	16.00 to 17.00
Old Car Wheels	10.00 to 11.00
Old Iron Car Axles	15.50 to 16.00
Old Steel Car Axles	14.00 to 14.50
Heavy Melting Steel Scrap	10.00 to 10.50
No. 1 Railroad Wrought Scrap	11.50 to 12.00
Iron Track Scrap	10.50 to 11.00
Wrought Pipe	7.50 to 8.00
Ordinary Light Iron	6.50 to 7.00
Cast Borings	3.50 to 4.00
Wrought Turnings	5.50 to 6.00
No. 1 Machinery Cast	9.00 to 10.00
Stove Plate	8.00 to 8.50

The masters' and pilots' strike on the lakes was broken on Tuesday by the surrender of the masters. Paul Howell, district captain of the Masters and Pilots' Association, gave out the following statement: "The Masters and Pilots' Association have concluded that it would be good policy at this stage of the game, owing to existing conditions over which we have no control, to advise our captains to go to work and make the most of a bad situation."

Metal Market.

NEW YORK, June 15, 1904.

Pig Tin.—After declining steadily throughout the entire week the market reacted slightly at the close to-day on the strength of higher London cables. The recovery of this afternoon was merely sympathetic. The declines of the week were due to continued heavy selling on the part of the Eastern producers. These sales were very persistent and have been made steadily, despite the declining market. The inference drawn from these facts in the trade is that the Chinese producers have played another of their tricks and that there was no foundation for their reports early this year to the effect that the production would be considerably lower this year than it was last. On the contrary, judging from conditions existing at present and the rate at which the producers have been selling, it is taken that the production this year will be in excess of former years. It is predicted that the shipments from the Straits this month will be extraordinarily heavy, the estimates of the month's shipments being in the neighborhood of 5000 tons. Almost half this amount has arrived here this month already. It is reported that large quantities of Tin are now being placed in warehouses here, as the deliveries into consumption are considerably slower than the pace at which the metal is coming into this country. The arrivals thus far this month have aggregated 2235 tons, and the amount of metal afloat foots up to 1739 tons. At the close of the market to-day the following prices prevailed: Spot, 26.20c. to 26.45c.; June, 26c. to 26.30c.; London, spot, £119 10s.; futures, £118 17s. 6d. The lowest point of the week was reached yesterday with 26.15c. prevailing for spot and 26c. being quoted for June. The London market was then quoted £118 10s. for spot and £117 15s. for futures.

Copper.—The market is lower, weak and uninteresting. Prices have been reduced to the following level: Lake, 12.62½c. to 12.75c.; Electrolytic, 12.40c. to 12.62½c.; Casting, 12.12½c. to 12.25c. The London market declined yesterday to £55 12s. 6d. for spot and £55 11s. 3d. for futures. At the close to-day the London cables recovered to £56 2s. 6d. for spot and £56 for futures. Best Selected is quoted £59 5s., a decline of 10 shillings, as compared with last week. The exports have so far this month continued on a large scale. They amount at this time to about 6498 tons. Demand in this market is still very light.

Pig Lead.—Another reduction in the price of their shipment Lead has been made by the American Smelting & Refining Company. They cut the price yesterday to 4.20c. from 4.25c. This is for Desilverized in 50-ton lots, delivery within 30 days at the pleasure of the company. As there is a fair amount of stock in store here the new price is practically being met by dealers on spot orders. These, however, are scarce. The St. Louis market declined to 4.10c., and London cables £11 8s. 9d., a fair decline from last week.

Spelter.—The market is in a rather dull condition, although prices have gradually advanced to 4.75c. to 4.87½c. for spot. St. Louis still quotes 4.60c., and the London market is unchanged at £21 15s. Business is very slow.

Antimony.—The market is unchanged. Hallett and Cookson's are both quoted at 7.25c., and other brands are unchanged at 6.25c.

Nickel.—The usual amount of business is passing and prices are firm, large lots being quoted at 40c. to 45c. and smaller quantities at 50c. to 60c.

Quicksilver.—The market is quiet, with ample stocks and a demand of moderate proportions. Flasks of 76½ lbs. are quoted at $45. The London price has declined to £8.

Tin Plate.—The market is unchanged, with a fair demand reported. Quotations are very firm, on the basis of $3.45 per box for 14 x 20 100-lb. Cokes, f.o.b. mill, equivalent to $3.64, New York. The Welsh market has advanced 1½ pence, to 11 shillings 6 pence, f.o.b. Swansea.

On the basis of the Government crop report for June 1, according to the estimate of J. C. Brown, statistician of the New York Produce Exchange (the Department of Agriculture making no quantitative estimate), the promise is for a winter wheat harvest of 365,627,000 bushels, which is 34,000,000 bushels below the 1903 yield. Taking the combined figures of winter and spring wheat, the total harvest outlook indicates 657,021,000 bushels, which compares with last year's total yield of 637,821,835 bushels, and has been but thrice exceeded—namely, by the harvests of 1902, 1901 and 1898.

The structural iron workers employed on a new bridge of the Boston & Maine Railroad near Portland, Maine, went on strike June 7 for an eight-hour day, but most of them returned to work under the old conditions after being out only a few hours.

PERSONAL.

Thomas E. Hoye, vice-president of the H. Mooers Company, Milwaukee, Wis., manufacturers of steam heating appliances, has been appointed a member of the Milwaukee Board of Public Works, to succeed Frank Niezorawski, resigned.

Joseph Flather of Flather & Co., Incorporated, Nashua, N. H., former president of the National Machine Tool Builders' Association, has gone to Europe on a trip which will combine business and pleasure.

Ambrose Monell, president of the International Nickel Company, New York, has sailed for Europe.

Judge E. H. Gary, chairman of the Executive Committee of the United States Steel Corporataion, has gone abroad for rest.

W. S. McKinney of the McKinney Mfg. Company, Allegheny, Pa., has sailed for Europe, accompanied by his family.

Wallace C. Johnson, hydraulic and electrical engineer, Niagara Falls, is most prominently indorsed for the position of engineer member of the State Water Storage and Flood Commission of New York.

W. T. Graham, president of the American Sheet & Tin Plate Company, has tendered his resignation, to take effect July 1, for the purpose of accepting the presidency of the American Can Company. President F. A. Assman of the American Can Company is traveling in Europe for his health, but his condition is such that he will shortly resign. The interests in control of the company made such a tempting offer to Mr. Graham that he felt constrained to accept it.

OBITUARY.

JOHN DUNCAN, assistant superintendent of the Calumet and Hecla mine, which he aided in opening, died of heart failure at his home in Calumet, Mich., June 5.

JAMES A. MYERS, president and treasurer of the Robbins & Myers Company, Springfield, Ohio, died May 27. A month before he had returned from an extended business trip and seemed in good health, but on May 7 he became ill and developed symptoms of typhoid fever, which terminated fatally. Mr. Myers was born at Jamestown, Ohio, in 1851, and was educated at Bowersville Academy. He removed to Springfield in 1876 and engaged in business. In 1878 he became interested with Mr. Robbins in the iron foundry business, in 1889 forming the present Robbins & Myers Company, becoming president on the retirement of Mr. Robbins in 1900, which office he occupied at the time of his death. Mr. Myers became actively interested in electrical affairs in 1896, about which time his company entered the electrical manufacturing field. To his energetic and careful management the prominent position of his company is largely due. He leaves a wife and two sons.

GEORGE RICHMOND, consulting engineer and head of the sales department of the De La Vergne Refrigerating Machine Company, New York, was found dead in his private office on the afternoon of June 4, under circumstances which point to suicide. No reason for the act is known. Mr. Richmond, who was 55 years old, was an authority on ice making machines and had written several books on the subject. He had been with the De La Vergne Company for a number of years.

Iron and Industrial Stocks.

With the exception of a portion of Monday, the market since our last issue has been firm, with an advancing tendency. The volume of business in Iron and industrial stocks was not large, yet in some instances an improvement in this respect was noted in the transactions. Can preferred, under the stimulus of reports of another dividend in prospect, advanced from 37½ to 39½; Colorado Fuel ranged during the week between 28 and 30¾; Republic preferred, which had declined to 40¾, recovered to 42; Tennessee Coal advanced from 33¾ to 35½; Steel preferred ranged during the week from 53¾ to 54⅞; New 5's from 74 to 74⅞. Last sales on active stocks up to 1.30 p.m. on Wednesday, were as follows: Car and Foundry common 16¾, preferred 70½; Locomotive common 18¼, preferred 83; Colorado Fuel 30; Pressed Steel common 27, preferred 70; Republic common 6¼, preferred 40¾; Sloss-Sheffield common 35¼, preferred 82; Tennessee Coal 35; United States Steel common 9¼, preferred 54⅝; new 5's 74⅝.

The statement of the earnings of the Sloss-Sheffield Steel & Iron Company for the quarter ended May 31 last, issued on Tuesday, shows that the earnings were much smaller than for the same quarter last year, but larger than for the corresponding period in 1902 and 1901. The form of the statement was changed to the extent that heretofore separate entry had been made of the charges for depreciation and renewals, whereas the statement for the past quarter does not show the charges for depreciation and renewals. The usual charges under these heads were made, but were included in operating expenses. The statement of earnings for the quarter compares as follows with those of the two previous years:

	1904.	1903.	1902.
Profit from op	.....	$650,718	$307,617
Depreciation repair and renewal fund	.....	42,738	35,643
Net profits	$278,485	$607,980	$271,974
Interest and taxes	60,000	60,000	60,000
Balance	$218,485	$547,980	$211,974
Preferred dividend	114,000	114,000	114,000
Surplus	$104,485	$433,980	$97,974
Previous surplus	2,344,261	1,645,680	614,391
Total surplus	$2,448,746	$2,079,660	$712,365

The Barney & Smith Car Company have issued their annual statement for the year ended March 31, 1904. The income account compares as follows with the previous year:

	1904-3.	1903-2.
Net profits	$633,553	$566,261
Other income	.....	.....
Total income	$633,553	$566,261
Charged off	.....	3,750
Balance	$633,553	$562,511
Interest on bonds	60,000	60,000
Balance	$573,553	$502,511
Preferred dividends	200,000	200,000
Surplus	$373,553	$302,511

The net profits for the year show an increase of $67,292, and the surplus for the year shows an increase of $71,042.

Dividends.—The Westinghouse Air Brake Company, Pittsburgh, have declared the regular quarterly dividend of 2½ per cent., and an extra dividend of the same amount, both payable July 10. The dividend is the same as that paid last quarter, the extra being 1 per cent. less than paid in the previous quarter.

Sloss-Sheffield Steel & Iron Company have declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable July 1. Books close June 21 and reopen July 2.

Otis Elevator Company have declared a quarterly dividend of 1½ per cent. on the preferred stock, payable July 15 to stockholders of record June 30.

Central Coal & Coke Company have declared quarterly dividends of 1¼ per cent. on the preferred and 1½ per cent. on the common stock, payable July 15.

The Southern Consolidation.—The reports of the experts who studied the mineral properties of the three leading Southern furnace companies have been received. They were to be the basis of a proposed consolidation of the Tennessee Coal, Iron & Railroad Company, the Sloss Iron & Steel Company and the Southern part of the Republic Iron & Steel Company. They are disappointing to each individual company so far as the figures for its own tonnage of coal and ore are concerned, and seem by each to be regarded as exaggerated, so far as they represent the mineral wealth of the others. The result is that it is regarded as highly improbable that anything will come out of the consolidation plan.

The Emlyn Iron Works, whose rolling mill is at East Chicago and headquarters are in Chicago, have made an assignment. The Equitable Trust Company were appointed receivers by Judge Kohlsaat on June 13. The mill had been closed down for several months.

The Jones & Laughlin Steel Company, Pittsburgh, have just opened a branch office in Atlanta, Ga., in charge of W. M. Kelley, who will take care of the trade in Southern Tennessee, Virginia, and east of the Mississippi River. Mr. Kelley was sales agent of the Carnegie Steel Company at Atlanta, but resigned that position recently.

HARDWARE.

A LARGE volume of business at a moderate margin of profit is the keynote of modern trade in the production and distribution of goods. It applies to the transactions of the manufacturer and the merchant. A large percentage of profit is recognized as a temporary condition, and is often explained by the fact that business transacted frequently at a loss justifies and even requires the making of abnormal profits when circumstances are propitious. In the Hardware field, with which we are specially concerned, the principle of narrow margins on all lines in which there is competition is being felt more and more. The maintenance of high prices yielding a fancy profit is in competitive lines regarded as unwise, as certain to encourage new competition, the ultimate effect of which is closer figuring and narrower margins. Some eminently wise manufacturers are consequently known as consistent opponents of high prices on their products, even under circumstances in which such high prices could be readily obtained. With the jobbing trade the manner in which the growing costs of doing business crowd upon the selling prices of the goods enforces the same principle, so that when the books are balanced a very moderate percentage of the year's sales, far less than is usually imagined by those who look at the matter from a distance, remains as a profit from the year's work. The margin taken, all in all, is exceedingly small. This fact finds an impressive illustration in the manner in which jobbing houses have been withdrawing from the field, especially in the older sections of the country, where jobbing interests are becoming less and less prominent in the distribution of Hardware.

The retail merchants in many markets feel the influence of this tendency toward narrow margins. Competition among themselves is keen. Their larger customers are eagerly sought after, and sometimes by jobbers and manufacturers. The department store, the spirit of the time in which bargains are looked for and leaders are made on popular goods, the wide dissemination of information in the advertising through newspapers of low prices and special sales, the very spirit of enterprise and push and the desire to extend his business and increase his sales which is characteristic of the successful merchant—all these are influences which tend to diminish the margin of profit on a given article. So far as this narrowing of margins is voluntary it is indeed with the hope that the aggregate profit will be increased and that the results in a business way will be better and more satisfactory taken all in all than if higher prices were demanded for the goods in question. This lesson is, however, being enforced most emphatically, and sometimes in a manner that is almost painful to the startled merchant, by the methods and prices of the catalogue houses, who on many lines are in cold type naming figures on certain leaders which are lower, especially if the cost of delivery be overlooked, than those at which the goods have been commonly sold. This competition makes special appeal to the merchant for alertness and enterprise in the conduct of his business, and reminds him of the tendency toward narrow margins which is recognized by those from whom he purchases his goods, whether manufacturers or jobbers. It impresses upon him the fact that he must expect to reckon with this tendency. He may resist as much as he deems advisable, but it is the part of wisdom to bear constantly in mind this principle and to follow the advice so forcibly given by the officials of the National Retail Hardware Dealers' Association, to meet the prices of the new competition. It is very well to aim at a good profit, and the wise merchant will be very careful not to sacrifice his goods, or in the presence of a possible menace to slaughter his prices, but at the same time he must order his business in recognition of the fact that the trend of things is toward low prices to the public, with less margin for the merchants on any given article than were normal and readily obtained 50 or even ten years ago.

In this connection we make an extract from a letter of a leading manufacturer with wide trade relations, whose policy has been to market his goods very largely through the jobbing trade. It touches on the point we have made above, and presents clearly and with remarkable frankness some aspects of the problem with which the trade is confronted in a way that cannot but be suggestive to the manufacturer, jobber and retailer:

> While we sympathize with the efforts made to regulate catalogue house competition, and do ourselves regulate it, what little we do of it, it is, nevertheless, to the interest of every manufacturer that his goods should be offered to the consumer at the lowest price consistent with paying a fair profit to himself, to the jobber and to the retailer. Experience shows conclusively that a reduction in the price to the consumer is always followed by an increase in the volume of the business. Catalogue houses and department stores understand this fact thoroughly. It will be a healthy thing for both the jobbers and the retailers of Hardware if they will get the same firm grip upon this fact.
>
> If the catalogue house competition, which is now worrying us all so much, is to be met, it will be, in our opinion, when the jobber and the retailer have so ordered their business that the retail Hardware dealer in the small towns, where the bulk of the catalogue house clientage is, shall be able to sell Hardware to the consumer at prices which will approach much more nearly than now the prices which catalogue houses are making. The Hardware jobber who sells his Nails, Wire, Steel, Tin Plate and heavy goods generally at 2½ to 5 per cent. profit, and adds 50 per cent. profit to certain lines of his Shelf Goods to make up for this, combined with the country retailer who slaps on 100 per cent. profit before the goods get to the consumer—these two make a combination which is easy for the catalogue house to beat.

Condition of Trade.

It is not an uncommon thing for manufacturers to refer in conversation to the quietness of trade at the present time and to the indications of a letting up in the insistency of the demand, but such acknowledgments are usually supplemented by a reference to their own business for the first five months of the year as about equal in volume to that of 1903. That there is thus no reason for complaint is evident, and the first half of the year will undoubtedly in most cases show a very satisfactory state of things. Conjecture is naturally rife as to the course of business during the remainder of the year. The crops, fortunately, are promising well, and, although it may be expected that discouraging reports for one reason or another will be current, this fact is worth something as giving an undertone of confidence to speculations in regard to the future. It is rather expected that prices of goods near the raw material will develop more or less weakness, and this fact, as much as anything in the present situation, leads manufacturers and merchants to pursue a careful and conservative course,

not buying beyond their early requirements. Manufacturers who are given the opportunity to accumulate goods are not intending to stock their warerooms too heavily. At the same time, they recognize the advantage there is in being able to ship goods more promptly than has generally been the case during the past few years. There are plenty of indications, too, that the jobbing trade will avail themselves of the facilities thus afforded them for the expeditious obtaining of goods, as they will probably let the manufacturers keep the stocks which they have themselves been in the habit of carrying. The changes in price are few and unimportant. Export trade presents no new features, but increased enterprise and push on the part of manufacturers in finding foreign markets are noticeable.

Chicago.

(*By Telegraph.*)

Wars and rumors of wars in prices of such staples as Nails, Bolts, Locks, Hinges and other lines are stirring the trade into a feeling of unrest. The expiration of patents on the Coated Nails has led to a three cornered fight for business in this specialty, $1.50 and $1.55 base being obtainable by jobbers at Chicago on good lots from the mills. Bright Nails and Cut Nails are also being shaded, and jobbers are offering their customers carloads from mill on the basis of $2.05 per keg or better on bright Wire Nails, with corresponding concessions on Steel Nails. Machine and Carriage Bolts are extremely weak, with a feeling that association prices must come down very soon. The four or five leading producers of Builders' Hardware are confronted with the loss of their trade on the cheaper lines of staples that are made by numerous smaller competing interests, who are forcing prices down notch by notch in their efforts to induce buying. Lawn Mowers, Garden Hose Sprinklers, Wire Cloth and other warm weather lines have been given a temporary stimulus by a few more days of weather that permitted the doffing of overcoats. Some encouragement is seen in the increasing tendency to order fall goods by country retailers. Crop reports are encouraging; political affairs are assuming more certainty of stability. Those who take the broad view of the situation are reassured, in spite of the temporary unrest engendered by instability of prices.

Philadelphia.

Supplee Hardware Company.—Wholesale business in trade circles gives evidence of approaching summer, and trade is now largely confined to the kinds of goods used during the summer months, Screens, Screen Doors, Lawn Mowers, Hoes, Rakes, Scythes, Snaths, Maslin Kettles, &c., showing prominently in the daily orders. During the entire past two months, however, complaints have regularly reached us that unseasonable weather has retarded the distribution of goods, and whenever conditions of this nature exist conservative buying will almost invariably follow.

We find some little disposition on the part of the retail trade to increase their line and variety of goods—that is, correlatives of Hardware in connection with the regular hardware—but it is largely the case that it is only good and efficient salesmen who can induce the buyer to enlarge his variety of goods, and thus consistently extend his line, which, if properly extended beyond the ordinary kinds of goods, will increase his trade. Every consumer or buyer from the retail trade is likely to know what ordinary goods can be found in a retail Hardware store, but many Hardware stores in many towns and cities in the country do not give the same thought as given by others who are able to extend their trade by increasing their line of goods beyond the ordinary leaders—say, for instance, in Locks, far beyond the common cheap rim Locks and mortise Locks. The prosperity of the country and improvements made in building, as well as the materials used in buildings, have reduced the call for the cheapest goods, and fancy escutcheons and knobs on the outside door locks are used, as well as fancy inside door sets. This is the case also with store Door Locks and Night Latches, as well as the cheaper kinds of Padlocks; also, Knives and Forks will be purchased if the retail merchant keeps a line of high grade Knives and Forks, Carvers, Spoons, &c. The lowest priced Lawn Mower is not the cheapest in the end, nor will cheap Mowers make as good and handsome a lawn. The lowest priced mechanics' tools are not the cheapest and most effective in the hands of the user, the poorest and cheapest grade of kitchen furnishings are not a desirable kind either to sell or use, and so one could go on over the entire line of Hardware. It is not the cheapest single barrel Gun that is most satisfactory to the user, nor is the cheapest double barrel Gun all that buyers would want if they could find something better kept by the ordinary seller. There is every opportunity for the retail merchant to investigate this, because the large catalogues that have been issued in the past few years give every buyer an opportunity to see when he can extend his variety, if the salesman will take a proper interest in giving advice or information to the buyer. Now seems a good time to take this matter up among salesmen, as the question of catalogue house business is largely before the country. It has been largely discussed, and great progress has been made the last two years by both the National Hardware Association and the National Retail Hardware Dealers' Association. The good results are now being shown, the question being largely discussed both before conventions and in the Hardware papers. We feel that every good retail merchant will do his best to secure trade, a good deal of which has been left in the hands of catalogue houses the last few years.

New building operations are still largely retarded, and in many instances have been temporarily abandoned, owing to the uncertainty that trouble may again crop up with the labor element; and among many instances we could name there is one that has recently come bofore the writer, where a man bought two dwellings, intending to take them down and substitute one new building, but after waiting over a year he decided to rent the two houses, rather than undertake the uncertainty of building, and purchased another house for his own occupancy, thus leaving the original two buildings on his hands for rent. Many instances of this nature could be given in Philadelphia and other large cities, as well as abandoned projects found in many small towns and cities.

It now looks as if the coal strike which was feared in our State might pass over. The many workmen who have recently been thrown out of employment may have had some effect to prevent a strike, and the large number of immigrants now entering our Atlantic ports will add many thousands to the unemployed, who must soon secure employment or be at the mercy of some one for support. The present transportation rate of $10 from Great Britain, Germany or France, with a 4 per cent. cut below that price on two lines, has been the cause of thousands coming upon the steamers now arriving, and their capacity for steerage passengers is fully tested. This is a less rate than it costs to go from Philadelphia to Pittsburgh, including sleeping accommodations. We have recently heard of the arrival of some immigrants who had been rejected in Canada, as they could not pass the examination required, and have recently heard of the arrival of one man who was able to borrow, within a couple of days after he arrived here, $40 to bring four of his personal friends from the other side. It looks to us as if this would at an early date put an end to the strikes, as comparatively few of the immigrants are willing to go into the far Western farming districts, but are willing to engage in the coal fields, as well as other industries.

The unfortunate experience of very many throughout the country who have sustained losses from the declines on inflated or watered stock enterprises during the past two years (which losses have reached into very many millions of dollars) has caused a lull in the stock market, consequently money has accumulated in the large distributing cities from the fact that stock transactions do not at present require funds, so money is cheap on good collaterals or the best rated paper. Consequently, manufacturers of all lines of goods can from their largest and best customers get prompt cash payments; but in the rural districts collections for the coming two months are

likely to be reduced to perhaps a minimum, although collections up to this time have been fair.

Cleveland.

THE W. BINGHAM COMPANY.—If we ever do have summer weather "in the good old summer time," we shall all feel much better natured and feel more as though we did live in a "land of promise" and good things. A lot of orders were placed early for summer goods in anticipation of sales, and feeling that the consumers would anticipate their wants and buy same. The weather man has prophesied warm weather for a month past, and he always (?) tells the truth. However, there is a lot of miscellaneous business coming to the Cleveland market—that is, a large number of medium sized orders, and these orders are fairly well assorted, showing that the retail dealer is having a steady trade on miscellaneous goods in spite of the shutdowns and labor troubles that we hear so much about.

On account of the good wages that have prevailed all over the country for some time back the majority of laborers have a good bank account, and they like to slick up their homes and are buying many luxuries as well as necessities. The farmer also is getting good prices for all his products, and he, too, is happy and contented, or would be if it would quit raining, but it is said that "all good things come to those who hustle while they wait."

The present prices of Black and Galvanized Sheets are stimulating their use, and the dealers are buying quite freely, as the price is low. Considerable inquiry for Roofing Plate is coming to us. A lot of orders are being placed for fall shipment of Elbows, Coal Hods, Meat Cutters, Stuffers, Stove Boards, Lanterns and Dampers. A good, healthy trade is going on now on Freezers and Refrigerators, as the Cleveland jobbers are well stocked to meet the demands of their customers and these goods can be shipped promptly.

On the whole, business is quite satisfactory for this time of the year, but we do sincerely hope that we will soon have some warm weather. We would like to change from winter to summer clothes. The 1st of June is straw hat day, but only a few have dared to appear on the streets, and the old winter derby is good enough.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—We have been enjoying beautiful weather. Business in June promises to be better than in May, which is an unusual condition. Both numbers of orders and sales are running largely ahead of last year. In June last year St. Louis was afflicted with teamsters' strikes and floods. This year we have no such interruptions to business. The jobbers in this city are filling orders more promptly than ever before. Eastern manufacturers are also filling their orders promptly. Orders to-day are being shipped more complete than for several years past. Under such conditions there is naturally more pleasure in doing business, which goes to show that some shrinkage in the general volume of the business of the country is not without its compensations.

Retail dealers are now coming to the Exposition in daily increasing numbers. The jobbers of this city are very glad of the opportunity to meet their customers and show them over their establishments.

The writer has just returned from an extended trip throughout the East. He was surprised to note a good deal of hesitation on the part of manufacturers and to hear doubts expressed in regard to the immediate future of business. For the past few years the manufacturing sections of this country, particularly in the East, have enjoyed a period of most wonderful activity. Too many manufacturers have judged of the whole country by the conditions that immediately surrounded them. A considerable part of the territory tributary to St. Louis has not enjoyed even normal prosperity the past three years. If the present prospects for good crops materialize these sections will be in better condition this fall than for some time past.

One of the best barometers of business are the Clearing House reports. Reference to these shows that the West is in splendid condition. For instance, the Clearing House reports in this morning's paper show, over the corresponding week of last year, an increase of 34 per cent. in St. Louis and 27 per cent. in Kansas City. On the contrary, in the East we find New York shows a decrease of 27 per cent.; Boston, 18 per cent.; Philadelphia, 12 per cent. for the same period. These figures certainly indicate that commercial conditions in the Central West are not unfavorable.

It must also be taken into consideration that while the East was indulging in an era of unusual speculation, business men of the West were attending more strictly to regular business. The writer in conversing with a number of prominent merchants in the East found their personal experiences in the stock market had a good deal to do with coloring their impressions of general conditions. As the World's Fair is finished it is practically of no help to the Clearing House reports of St. Louis. That it is a general condition is shown by the gain of our sister cities in this section.

The St. Louis World's Fair is now completed. It will meet the expectations of the most sanguine. The world has never before seen its equal, and probably none of us in this generation will again have an opportunity to see such a wonderful production. The electrical display at night is one of the strongest features of the fair, and its beauty is beyond imagination. While the city is well filled with strangers there has been no complaint of a lack of accommodations of any character, nor have transportation facilities to and from the grounds proved inadequate. The leading hotels of the city are under contract with the World's Fair management not to charge over certain schedule rates, which are reasonable for the accommodations given. Certain reports that have appeared in the New York papers are misleading and unwarranted by the facts, and the causes leading up to these articles are well understood by those who are informed. The writer is quite sure he can to-day secure better accommodations in St. Louis hotels at the same price than he recently enjoyed in Gotham.

Boston.

BIGELOW & DOWSE COMPANY.—Talk among the trade is conservative and bearish on the market, and one would infer that general trade was at a low ebb, but almost all, when asked how *their* sales compare with last year, will answer: "Oh, ours are about the same or even a little ahead." The facts are that every house is doing a good, comfortable business, as indicated by the packing floors and the loaded drays on the streets.

The retailers are buying carefully, and the weather was never so much a barometer of trade conditions as it it to-day. Sunshine brings a good volume of orders, while dull weather applies the brakes. Trade is about two weeks late, and it looks like June sales would run ahead of last year; but it all depends upon the weather. After a series of very warm days, last Sunday a fall in the mercury of 40 degrees made a seat by the fireside very comfortable. Heat, and plenty of it, brings our friends from the West and the South to our seaside resorts, and is as necessary to New England as a good crop of cotton to the South or wheat and corn to the West. Two weeks ago the rush commenced, as indicated by the piles of trunks in the stations and in the transfer wagons. The cool weather the past week has stopped it, but the balmy air and sunshine to-day, we hope, is the forerunner of summer, when our friends can enjoy their homes by the sea.

Labor is unsettled, and the threats of the freight handlers and ocean steamer firemen, if carried out, bid fair to cause trouble. Cotton mills are working on short time, on account of the high prices that have been ruling in the raw material. Woolen mills are fairly busy, but are working on close margins of profit.

Presidential year is a bugbear that we think too much about, but while it is well to be conservative and careful, at the end it will not be unlike others that have passed without any serious happenings. Prices are being well maintained and collections are improving.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—There seems to be a little better movement of merchandise, incident to good weather, though this latter is still a little too cool

and wet in most of the territory here and West. Still, if we have sunshine from now on in due proportion we shall have a magnificent wheat and hay crop, to say the least. Railroad earnings seem to be improving, though not very much, to be sure, but enough to indicate that the sluggish tide has probably turned and is lapping its way up the shore again.

With all the sensational reductions on the part of railroads and other large employers, labor is still very generally employed and very well paid. The center of disturbance seems to be out in the Colorado mine region, where practically a state of war exists. The war has to come sometime and somewhere apparently, for the enforcement of the idea that in the United States people who so desire shall be able to work unmolested. Possibly this is the beginning of a more widespread struggle for the determination of this right of the American citizen, though it may be only a preliminary skirmish. There is plenty of law; it is only a question of the authorities being firm in their maintenance of it.

Echoes of the Atlanta meeting continue to come in in the way of friendly correspondence elicited by the fellow feeling which found expression there. There could not have been a more harmonious, better tempered gathering that was had in that progressive Southern city. Its ambitious skyscrapers did not look a bit too high after we became familiar with the grateful shade they cast on the sidewalk below, and got to know the people who regularly perambulated thereon.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Trade does not hold up with the improvement in weather, reported in our last. The weather has better staying qualities than trade. It is now a waiting propostion to see whether our fine crop prospects make good—a case of "Be sure you are right and then go ahead."

There is a great amount of building in progress, but it does not seem to infuse the life into business that the same amount did a year or two since. There is little doing in real estate; those having money at their command prefer letting it remain idle rather than to invest. When things East and West get a move on, it is a gamble at present as to which way the pendulum will swing.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We are having about the usual trade at this time of the year, this being one of the dullest months in the Hardware business. Crop prospects so far are good. The wheat crop, which was not plowed up by the farmers early in the season, is going to show a good yield per acre, but the acreage is exceedingly light. The prospects for fall business in this section seem to be good.

The reunion of the United Confederate Veterans takes place here on the 14th, 15th and 16th inst. We are expecting 100,000 visitors. Our town is now arrayed in bunting and flags, old war reminiscences are the order of the day, and our hearts and minds have gone back to the tragic days of the 60's, and we cannot bring ourselves to think of the Hardware market, and will have to pass it up until our next letter.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—There has been no appreciable change in trade conditions in Omaha and territory tributary since the first of the month. As we have noted for some time, the movement of all kinds of Hardware has been fairly satisfactory to the jobbing trade. The change to warm and summer-like weather has had a tendency to stimulate the demand for spring and summer goods. All accounts agree that conditions in the "corn belt" are in excellent shape. The prospects for a large yield of grain of all kinds are very flattering, and the trade generally feel confident in predicting a heavy volume of business during the latter half of the year.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Business conditions continue favorable. Trade is active, but not specially heavy. The demand for goods is steady and runs through all lines. Weather conditions are very favorable. Crop prospects continue satisfactory. Collections are somewhat below normal.

NOTES ON PRICES.

Wire Nails.—There is comparatively little new business being received by the mills and contract orders are nearly all filled. Rumors are to the effect that a reduction in price would not be a surprise to the trade. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95
Retailers, less than carload lots	2.05

New York.—Demand is moderate, with the local market firm. Quotations are as follows: Single carloads, $2.10; small lots from store, $2.20.

Chicago, by Telegraph.—Jobbers, who are supposed to be paying $2.05, base, Chicago, for Wire Nails, are selling car lots at that figure, or lower, from the mill, and are glad to get $2.10 to $2.15 from stock. Due to a price war incident to the expiration of certain patents, Coated Nails are offered to retailer or to large consumer at $1.55 to $1.60, base, per keg.

Pittsburgh.—Demand for Wire Nails is very quiet, and as the mills have about cleaned up contracts they are going after orders more vigorously than for some time. It is not unlikely that a reduction in price of Wire Nails by the leading interest will be made at an early date. Some unevenness in prices of Wire Nails for delivery at certain points is reported. We quote Wire Nails, $1.90 in carloads to jobbers, $1.95 in carloads to retailers, and $2 to $2.05 in small lots to retailers, all f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days, plus actual freight to point of delivery.

Cut Nails.—As usual at this season demand is light. Some irregularity in prices is reported and the market is not in a very satisfactory condition. Regular quotations are as follows for Steel and Iron Nails, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Base.
Jobbers, carload lots	$1.75
Jobbers, less than carloads	1.80
Retailers, less than carloads	1.90

New York.—A moderate demand for small lots from store characterizes this market. Some irregularity exists in prices, which is met quite generally in competition. The regular quotations are as follows: Carloads on dock, $1.89½; less than carloads on dock, $1.97½; small lots from store, $2.05.

Chicago, by Telegraph.—Cut Nails are weak at $2.06½, base, Chicago, to retailers in less than car lots, while jobbers claim to be offered Steel Cut Nails at 5 and 10 cents per keg below the association prices of $1.91½, base, in car lots, and $1.96½ in smaller lots.

Pittsburgh.—Demand is quiet and is nearly altogether for small lots. Prices of Iron Nails are fairly firm, but on Steel some cutting is being done for delivery at certain points. We quote Steel and Iron Cut Nails at $1.75, base, in carload lots, and $1.80 in less than carloads, f.o.b. mill, terms 60 days, less 2 per cent. off in 10 days.

Barb Wire.—The mills are now soliciting business, as new orders are comparatively few and contract orders have nearly all been filled. Prices are reported as being somewhat uneven, which leads to an idea that a reduction may be made. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago, by Telegraph.—Mills have caught up with their orders and are now out for new business. Prices are unchanged, retailers paying the following: Carload lots, Painted Wire, $2.40; Galvanized, $2.70; to retailers, carload lots, Painted, $2.45; Galvanized, $2.75; to retailers, less than carload lots, Painted, $2.55; Galvanized, $2.85; Staples to jobbers, $2.25 for Plain and $2.65 for Galvanized, with 5 cents advance to retailers.

Pittsburgh.—Very little new business is being entered by the mills, and as old contracts have about all been filled the mills are actively soliciting business. Some unevenness in prices is reported, and an official reduction in present prices is expected before long. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carloads	$2.20	$2.50
Retailers, carloads	2.25	2.55
Less than carloads	2.35	2.65

Smooth Fence Wire.—Mills will probably close down next month for the annual inventory and repairs. Demand is moderate on new business and contract orders are cleaned up. Prices are fairly firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.80
Retailers, carloads	1.85
Less than carloads	1.95

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base.	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago, by Telegraph.—Both Wire mills and Fence manufacturers have enjoyed a satisfactory trade for the last six months, and both are more than ready to take their usual July rest for inventory and repairs. Prices are unchanged, nominally at least, as follows: Smooth Fence Wire, sizes 6 to 9, $2 per 100 pounds in carload lots to jobbers, f.o.b Chicago; $2.05 per 100 pounds to retailers in carload lots and $2.10 in less than car lots.

Pittsburgh.—New business is only fair, but the mills have still a few old contracts not yet filled. Prices are fairly firm, but in some cases slight concessions are made. We quote as follows, f.o.b. Pittsburgh, terms, 60 days, or 2 per cent. discount for cash in 10 days: Plain Wire, $1.80, base, for Nos. 6 to 9, in carloads to jobbers, and $1.95 to $2 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14.

Binder Twine.—During the past two weeks the volume of new business has been limited, and the market for Sisal fiber has declined. Concessions from the schedule adopted April 15 are reported in the West, ranging from ¼ to ¾ cents per pound on Sisal and Standard, by some concerns. The control of the larger portion of the total product for the season is supposed to prevent a very weak market, as the total available supply is considered more than ample to cover the largest estimates of consumption. The International Harvester Company's schedule prices as as follows:

	Cents per lb.
Sisal	10¼
Standard	10¼
Standard Manila (550 feet)	11¼
Manila (600 feet)	12¼
Pure Manila (650 feet)	13¼

Five-ton lots, ⅛ cent less; carload lots, ¼ cent less. Kansas City, Minneapolis, Omaha, Council Bluffs, ¼ cent higher; Pacific Coast Points, 1 cent higher. Eastern prices are, as a rule, ¼ cent less.

Cordage.—Rope manufacturers, as a rule, refer to trade as dull for the season. While there has been no quotable change in prices, the market is not considered strong. Rope is produced by the manufacturers to suit the price customers wish to pay, with the exception of the best quality of Sisal and Manila. Quotations on the basis of 7-16-inch diameter and larger are about as follows: Pure Manila, 11 to 11½ cents per pound; other grades of Manila, 10¼ to 10½ cents, according to quality; pure Sisal, 9 cents; mixed Sisal 7½ to 7¾ cents, according to quality.

Glass.—The week has shown no improvement in the market, prices having a downward rather than an upward tendency. Several factories have closed and others have announced their intention of ending the blast during the present week. A meeting of the National Association of Window Glass Manufacturers was scheduled to be held on June 14 at Niagara Falls. In the call for the meeting it was stated that the signatures received for permanent organization greatly exceeded expectations. If the Niagara Falls meeting results in the formation of a permanent organization a firmer market should result.

Oils.—*Linseed Oil.*—The market continues quiet and demand is confined to small lots. This is the season when a brisk demand is usually anticipated, but it is not forthcoming. Quotations are as follows: City Raw, in lots of five barrels or more, 39 cents per gallon; in lots of less than five barrels, 40 cents per gallon; State and Western Raw, 37 to 38 cents per gallon. Boiled Oil, the usual 2 cents advance per gallon over Raw.

Spirits Turpentine.—The market is slightly higher, but buying at this point is only for immediate requirements. In the Southern market buying for export has been large, and has recently been the chief support of the market. Contracts which extend to September 1 are expected to require most of the receipts to fill them and to aid in keeping the market steady. Quotations in this city, according to quantity, are as follows: Oil barrels, 56½ to 57 cents; machine made barrels, 57 to 57½ cents.

DEATH OF C. GEORGE McCORD.

C. GEORGE M'CORD died of typhoid fever on the 7th inst. at his residence in Reading, Pa., aged 33 years. Mr. McCord was one of that city's best known young men, and as he had always enjoyed the very best of health his death came as a shock to his many friends. He was a son of Emma and the late Howard McCord, and was a life-long resident of Reading. When a lad he entered the employ of the Reading Hardware Company as a mail boy, and by strict attention to business he advanced himself to a leading position with the firm, which he held until last January, when he resigned. On April 1 of this year he engaged in business with William T. Adams, forming the Crescent Brass Mfg. Company of Reading. Mr. McCord was secretary and treasurer of the company. He was one of the founders of the Penn Wheelmen, was a thirty-second degree Mason, was a member of the Y. M. C. A., and belonged to the P. O. S. of A. and Trinity Lutheran Church. He was well known to the trade as secretary of the Pennsylvania Wholesale Hardware Dealers' Association.

TRADE ITEMS.

GEORGE E. STERNBERG, with the Peck, Slow & Wilcox Company, New York, will attend the two railway conventions to be held at Saratoga Springs, N. Y., June 22 to June 29, 1904. The sessions of the Master Car Builders' Association occur on June 22, 23 and 24, those of the American Railway Master Mechanics' Association being held the first three days of the following week, June 27 to 29, inclusive. Mr. Sternberg will make his headquarters at the Grand Union Hotel.

THE LUFKIN RULE COMPANY, Saginaw, Mich., have just issued a 48-page illustrated descriptive catalogue of their Measuring Tapes and Rules for distribution from their European branch, 48 Lime street, London, E. C. It contains in compact form all the goods they produce, except Lumber Rules, the Perfection Glass Board and the various advertising novelties they are continually getting out. The list prices are all in English sterling.

THE STRONG & TROWBRIDGE COMPANY, 21-24 State street, New York, announce the opening of their Egyptian offices at Cairo, Rue el-Moghraby, Calcutta Buildings. This business is conducted in connection with their Levant trade, a part of which is controlled from their Constantinople branch, which is under the management of B. O. Hough, and to which reference has already been made in these columns. From Cairo they cover not only all of Egypt and the Soudan, but also the Red Sea ports, Tunis and Tripoli in North Africa, Malta, Cyprus, &c. This trade is being conducted along agricultural lines largely.

J. P. Pederson, Ladysmith, Wis., will erect a new Hardware store on the site of the store of Burnie & Pederson, recently destroyed by fire.

THE CATALOGUE HOUSE QUESTION.

WE present in the following columns some communications from parties who represent the various departments of the trade, in which our correspondents express themselves frankly on the subject of catalogue house competition. These views, with all their diversity, are of value as indicating how the subject is regarded, and thus contributing to the solution of the problem.

Meanwhile something is being done for the protection of the trade. Some manufacturers are refusing out and out to sell the catalogue houses, while others are using their influence to prevent such houses from quoting unbusinesslike and demoralizing prices on their goods, to the detriment of the manufacturer as well as to the trade at large. There are doubtless many other manufacturers who are studying carefully the whole subject and weighing the question as to the proper course for them to pursue.

The Committee on Catalogue House Question.

The jobbers, too, are doing something, and some practical results of the agitation which began with the publication in *The Iron Age* April 7 of the letter of Mr. Norvell are becoming apparent. The committee which represents two of the prominent wholesale associations and also the National Retail Association is making its plans for work, and will meet at the Hotel Jefferson, St. Louis, Monday, June 27. This committee consists of the following representatives of the various associations: S. Norvell of St. Louis, R. A. Kirk of St. Paul, W. S. Wright of Omaha, T. J. Fernley of Philadelphia, R. M. Dudley of Nashville, W. P. Bogardus of Mt. Vernon, Ohio; M. L. Corey of Argos, Ind., and another representative of retail interests. Meanwhile it may be assumed that this able and thoroughly representative committee is giving careful thought to the lines on which it will work with a view to protecting as efficiently as possible the interests of the various departments of the trade. It is an able committee and much is expected as the result of its deliberations and efforts.

The Independent Jobbers.

It is to be noted, too, that some of the independent jobbers who have expressed their williness to co-operate with this committee, but who have not been invited to do so, are doing some effective work in communicating with manufacturers, urging upon them the protection of the interests of the retail merchants. A number of letters, for example, have been sent out by Simmons Hardware Company asking the manufacturers to co-operate in efforts against the disturbing influences of the catalogue houses, and on the lines suggested in the speech of E. C. Simmons at the Atlanta convention. The replies of manfacturers, we understand, have been of such character as indicate their approval of the position taken by Mr. Simmons and their willingness to co-operate in the efforts which are being made. In similar spirit, Hibbard, Spencer, Bartlett & Co. have been communicating with manufacturers, asking the manufacturers' co-operation in such a way as to place the retail Hardware merchants of the country in a position to hold their own against the competition of the catalogue houses. This appeal is made as jobbers who are interested in the welfare of the retail trade and recognize the menace to the interests of both jobbers and retailers which is found in the methods of the catalogue houses. Other means are, we believe, being taken by other independent jobbers.

This action of these great distributers, which include the largest jobbing houses of the country, will not only command the approval of all who are in sympathy with the movement which aims to keep distribution in the established channels but happily emphasizes the unanimity of the trade in regard to the matter. It is certainly a good indication when the organized efforts are thus supplemented—perhaps we should say preceded—by the individual efforts of prominent jobbers.

VIEWS OF A KENTUCKY WHOLESALE AND RETAIL HOUSE

As we occupy the position of both a jobber and a retailer, we fully understand the difficulties of the strictly retail house when it comes in competition with a catalogue house. We suggest that you get, if you haven't already gotten them, catalogues from all the houses that catalogue goods. We are sure when you compare the cost of the article of the average small retailer—and he is the one coming in competition more than anybody else with the catalogue house—you will find the cost of the small dealer is about what the catalogue house offers to sell the goods to the consumer for. So you see that the small retailer who buys his goods from the jobber does not occupy a position that will permit him to say to his customer, "I am here for business, and I mean to meet the catalogue house price." He simply cannot do it. So long as it was difficult for the catalogue house to get standard makes and recognized quality, that long the retailer had the advantage, but since the manufacturers are selling standard goods to the catalogue house the retailer cannot successfully compete on many goods that the catalogue house lists.

The retailer always sells a certain class of goods at less than the cost of doing business, and he of necessity must make up this loss for serving his customer without reasonable compensation by selling him some other smaller item or items bearing a greater percentage of profit.

This catalogue house proposition is a serious proposition, and will in time, if permitted to grow at its present rate, put out of business, in turn, a good many jobbing houses and quite a number of retailers. The catalogue house never created a demand for an article for the manufacturer. The demand was created by the retailer, who takes the article in his hand, directs his customer's attention to the advantages of the new article, and induces him to try it, and through the trial others are induced to try, and in that way the manufacturer is able to build up his trade.

EVERY MANUFACTURER MAKES A SERIOUS MISTAKE

who will permit his products to be marketed through a catalogue house. If they know their business they will not permit this very long. The greed for trade and excessive desire for gain often makes, not alone the manufacturer, but other people, "kill the goose that lays the golden eggs."

This catalogue house question should have been taken up and adjusted long ago. If it is to be a survival of the fittest, the man that does the business on the smallest margin of profit will succeed, and that man is the catalogue house. They take no chance and keep no books, buy for cash and sell for cash, taking no time to show customers a line of goods. With a buyer from a catalogue house, the buyer does all the work. He takes up the catalogue, peruses it carefully and posts himself, selects what he wants and the number, writes a letter, incloses the money and mails the order to the catalogue house. When it reaches the catalogue house the order is entered, filled and shipped, and with their facilities for handling trade it can be done very quickly and very cheaply.

On the other hand, a retailer is expected to keep an assortment, in a small community, of many articles that

he does not turn over once a year, and yet his store is not complete without such articles, that he is expected to add to accommodate lots of customers. He is expected many times to credit the customer on his books and send a collector to get the bill, and lose a portion of such charges, besides the expense of transacting business on credit. He is expected to send the article out with his delivery wagon for the retail customer's wife to see it, and if it doesn't please he is expected to take it back, and either furnish another one or credit it on his books. This makes the cost to the retailer a great deal more to do business than the catalogue house.

THE COST OF DOING BUSINESS.

The retail Hardware merchant cannot pay his house rent, taxes, insurance, advertising, collector hire, fuel, light, labor and incidental expenses and do business on less than 20 or 25 per cent. He sells nails, wire fencing and many other articles on a smaller margin than the cost of doing business. That being the case, he must make it up on something else. With the catalogue house staring him in the face, he can't do it. He will still continue to do a certain amount of business, but he will lose ground gradually. He will lose his money, and the jobber, and eventually the manufacturer, will be the losers. The catalogue house will not distribute one-half the goods that the old system of the jobber and retailer will distribute, but will do it at less expense. A moment's sober thought on the part of any one will demonstrate that without making any figures at all.

JOBBERS AND RETAILERS MUST MAKE UNITED STAND.

FROM A TRAVELING SALESMAN: I have read the arguments put forth by the manufacturer and jobber in regard to catalogue house business with considerable interest, as the subject has been "a bone of contention" with the salesmen on the road, in which capacity I am now and have been employed for the past 22 years. I was employed by a Chicago wholesale Hardware jobber, now out of business, some 24 years ago as a helper in their Lake street store, and saw the beginning of the now largest catalogue house in the country. This jobber was the means of starting this party in the Hardware line of his then infant business.

Little did we then dream of the future magnitude of the venture. Long ago has this catalogue house outgrown the need of help from that jobber or any other jobber in the Hardware or any other line of goods. We little realize the magnitude of the business done by the two leading catalogue houses, and if the jobber had the chance, as the commercial traveler has, of seeing the goods put off the freight trains at nearly every station and in the depots, waiting for their claimants to show up, he would wonder, as the writer has many times, where will this thing end.

Are the jobber and his true friend, the retailer, to be driven out of business, and the vast number supported by them be compelled to pocket their losses and seek other vocations, and as Mr. Bartlett of Hibbard, Spencer, Bartlett & Co. puts it in your issue May 12, is it morally right? A thousand times no. But something must be done, and that pretty quickly. The retailer must be put by the manufacturer on the same footing as the catalogue house, and buy his goods just as cheap. This would do away with the jobber. This would necessitate the retailers of Hardware forming a pool and resorting to syndicate buying and possibly establishing warehouses at a central point.

But the jobber is the true friend of the retailer, and his being able to get his wants supplied from one stock is a great help, and the average retailer is willing to let the jobber make a reasonable living profit if he could be assured of the same treatment in his home market. But no; this pirate catalogue business is choking the very life out of a thousand and one homes, and I cannot comprehend why any sane manufacturer, after careful study of the protests of the State Hardware associations and the jobbers, will persist in supplying goods to these houses under their own or any other brands. I can see no halfway style in this business. They must cut them out entirely or go with them.

The retailer will stand by his jobber, the best friend he ever had, and if the manufacturers don't stand by the jobber the retailers and jobbers will create a demand for goods not sold by the manufacturer to catalogue houses. It can be done, I don't care how well entrenched a hold the manufacturers' goods may have on the public. All that is needed is united action by the jobbers and retailers. It has taken years to get them together, but the time is ripe now, and a stand will certainly be taken, and the manufacturer is wise who heeds this warning and takes a bold stand on the side of right and justice. He will profit in the end.

IS THE JOBBER TO BLAME FOR MAKING HIGH PRICES?

FROM MERCHANTS ON PACIFIC COAST: Whatever may be said against mail order houses this much is evident, they are a great success. They furnish a cheap and convenient method for the rural population to purchase goods which their local dealer cannot supply.

Country stores are frequently not a model of neatness and completeness, but no matter how competent and alert a country merchant may be, it will be impossible for him to supply all the goods his customers may wish to buy. For this reason the catalogue house will continue to live, to grow and flourish.

But these establishments do not only sell goods which cannot be obtained in country stores; they ship through the length and the breadth of the land goods which lie on the shelves, year in and year out, in every store at the country cross roads. Why? The local dealer has an immense advantage over the catalogue house. He can show and display, praise and explain the merits of his goods and deliver them on demand. No vexatious delays are experienced, no money order fees and transportation charges to be paid, no payment in advance is demanded: yet the trade drifts away from home.

WHO IS TO BLAME?

Many years ago I was taught the surest way to kill your business is to charge your customer the highest price he is willing to pay. No doubt it is what many merchants are doing. But there are others. Though they conduct their business in an economical and efficient manner, though they cut the margin of profits to a minimum, they cannot successfully cope with mail order competition.

We are advised by a jobber through the columns of *The Iron Age* and by circular letter to make it known to our customers that we will meet prices quoted in catalogues. This has been our policy for many years. Of late, however, our cry, "Why buy goods abroad when you can get them just as cheap at home," has brought us to grief. We were forced to admit in several instances that we were unable to purchase goods as cheaply as they are being sold by catalogue houses. Rather humiliating! Who is to blame for this condition of affairs, the scrub merchants in the country or the post-graduates and high priests of commercial science—the jobbers?

A few months ago our jobber quoted us a School Bell, f.o.b his city, at $17.50, which the catalogue house delivered at our station—over 200 miles from Chicago—for $15.65, freight amounting to about 50 per cent. of the cost of the bell.

On my desk lies a letter in which our jobber informs us that his best price on Barbed Wire is 5 cents per cwt. more than the price quoted the farmers in our vicinity by an aspiring mail order house in his own city, at the same time giving us the comforting explanation that the new catalogue house received jobbers' rates and were handling the Wire on a very close margin of profit.

It may seem incredible, yet it is a fact that our jobber in Stoves admitted to us that he is granting special rates to one of the catalogue houses in his town.

"The jobbers will certainly assist." So we are told by a Chicago jobber in *The Iron Age*. Assist to meet catalogue competition? No. To kill the goose that lays the golden egg. JOHN L. GRUBER & SON.

WINLOCK, WASH., May 19, 1904.

SUFFERS MORE FROM JOBBERS THAN FROM CATALOGUE HOUSES.

FROM A HARDWAREMAN IN MICHIGAN: There is a great deal of talk by some of the jobbers in regard to catalogue house competition. But I would say right here, the worst competition the retailer has to-day is the jobber. We have here in our city representatives of jobbing houses making regular trips, calling on blacksmiths, machinists, &c., and even soliciting other individuals, the legitimate trade of the retailer. I would like to say to those jobbers to let up on advertising the catalogue house (for this is what they are doing) and call off their men from selling the consumer. Give the retailer the trade that rightly belongs to him and the catalogue houses would die a natural death.

Trade Organizations.

Ohio Hardware Association.

Ohio Hardware Association, Frank A. Bare, corresponding secretary, Mansfield, Ohio, issues a card in which the following reasons are supplied why merchants in that State should become affiliated with the association:

It identifies you with the progressive Hardwaremen of the State.
It makes you a member of the National Retail Hardware Dealers' Association.
It entitles you to every issue of the *National Bulletin*, free, which keeps you posted in matters of special interest to you.
It gives you the advantages of the organized efforts of the greatest retailers in the world.
At our annual conventions the subjects discussed in executive sessions are of vital interest to you in your business. Come and give the association the benefit of your experience.
At these conventions you will meet men who have made a success of the Hardware business. It will do you good to know them.
The Ohio Hardware Dealers' Mutual Insurance Company offer unsurpassed advantages in the way of insurance to Hardwaremen. This is one of the strong features of our association.
The great movements of to-day are accomplished only by organized effort.
Join to-day—you can help us.

On the other side of the card opportunity is offered for making application for membership.

Chicago Retail Hardware Dealers' Picnic.

The Chicago Retail Hardware Association will hold its tenth annual picnic at Northwestern Park, Wednesday, August 10. The following committees have been appointed by President H. E. Gnadt:

EXECUTIVE: W. H. Bennett, chairman; Fred. Ruhling, secretary; J. L. Smith, treasurer; A. J. Englehardt, G. R. Lott, Dennis McLaughlin.

TRANSPORTATION: J. L. Smith, chairman; W. J. Kreuger, W. B. Costello, W. M. Powers, O. J. Cluterham, Fred. Kurtz, G. R. Lott, Thomas Connor, O. Lockett, Jr.

DANCING: George Bartholdy, chairman; Leo Krueger, Charles Hadik, Chas. Menzel, Jr., Emil Sander, Grant Porter.

SPORTS: William T. Gormley, chairman; Geo. A. Neeb, G. A. Englehardt, H. C. Peppler, Frank Porter, Martin Englehardt, A. R. Solle, John Bregenzer, Ed. Repsold, W. B. Costello, Henry Stuckart, J. H. Gormley, O. Stebbins.

TARGET SHOOTING: G. A. Englehardt, chairman; C. A. Dalstrom, F. H. Schanze, L. H. Harding, Levi Rosenberg, J. Butweis, J. Hora, J. F. Borchardt, E. L. Sommers, H. E. Tyring.

REFRESHMENTS: Dennis McLaughlin, chairman; W. H. Bennett, G. R. Lott, A. J. Englehardt, J. L. Smith, Fred. Ruhling.

PRIZES: G. R. Lott, chairman; A. J. Englehardt, J. L. Smith, W. H. Bennett, Fred. Ruhling, Dennis McLaughlin.

MUSIC AND PRINTING: A. J. Englehardt, Fred. Ruhling, G. R Lott.

BADGES: Dennis McLaughlin, J. L. Smith.

JUDGES OF CONTESTS: Z. T. Miller, Sidney Johnson, R. R Shuman, R. Elliott, H. H. Roberts, J. O. Becraft, W. C Stephens, J. E. Harbster, D. W Simpson, J. D. Warren.

BASEBALL (Members only): Umpire, G. W. Trout.

BASEBALL (Open game): Umpire, W. C. Cutler.

Iowa Hardware Dealers' Mutual Insurance Association.

The Iowa Hardware Dealers' Mutual Insurance Association, A. R. Sale, secretary, Mason City, Iowa, who were organized August 20, 1903, have since that time placed on their books $350,000 of insurance among members of the State association, and are constantly adding new members and placing additional insurance. The Board of Directors of the association have recently declared a dividend on policies expiring on or before February 15, 1905, of 20 per cent. on premiums received for the business of that period. As fast as the renewal dates occur checks are being forwarded to their policyholders for the amount of their rebate, which, in most cases, is, of course, returned to the association with the draft for the renewal of the next year's business. The merchants seem highly pleased with the nice dividend that has been declared, as they know well that during the period of organization the ratio of expense incurred to the premiums received would be much higher than at any other time.

The plans of their association are to make a concerted effort to so increase the amount of insurance carried on their books that they can reduce the ratio of expense of management so that not more than 10 per cent. will be needed for this item. A sister association has already reduced the expense of management to about 12 per cent., and for a series of years the percentage of loss has been less than 25 per cent. These two items are, of course, the principal factors of expense, as agents' salaries or commissions are entirely eliminated, and new business is secured by means of correspondence and mutual interest of policyholders, directors and members of the State association. In renewing his policy for another year, one of their members says: "To exploit a new company and make it pay back a part of the premium during the first year of its existence reflects most creditably upon the economy, as well as the executive ability, of the company's officers. The showing made is certainly very auspicious, and must have a salutary effect upon the future progress of the association." This shows the spirit and interest taken by members and policyholders in the furtherance of the work of the association.

The Iowa Retail Hardware Dealers' Association is certainly entitled to great credit for being able to place such an organization upon its feet in so short a time, and it must be a source of much satisfaction to know that it has been able to produce such excellent results during its first year's history. It is only just to say that the credit of this good work is largely due to the progressive and wide-awake dealers of Iowa, who have been ready and willing to place their shoulders to the wheel and assist the insurance department of the association in its laudable work.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London Office; and at the same time to call our attention to any new goods or additions to their line, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

WILCOX MFG. COMPANY, Aurora, Ill.: Pamphlet devoted to Fittings for automatic fire doors.

COBB & DREW, Plymouth, Mass.: Price-list of Spring Cotters and Spring Keys, in effect March 1, 1904.

REED & PRINCE MFG. COMPANY, Worcester, Mass.: Catalogue of Wood and Machine Screws, Stove Bolts and Rods, Tire and Sink Bolts, Nuts, Taps, Rivets and Burrs, Hanger Bolts, Bent and Tinned Wires, &c.

NEW JERSEY FOUNDRY & MACHINE COMPANY, 9-15 Murray street, New York: Illustrated circular devoted to the Diamond Expansion Bolt and Shield, Omega Toggle, Drills for expansion bolts, Adjustable Cable Hanger, &c.

JANESVILLE HAY TOOL COMPANY, Ashland Block, Chicago, Ill.: Catalogue of Dead Lock Hay Carriers, Hay Slings, Forks, Hooks, Pulleys, Hardware Specialties and Implements.

BOSTON & LOCKPORT BLOCK COMPANY, Boston, Mass.: Souvenir booklet entitled "Keep a Pullin'," which is being principally distributed from their booth in the Manufacturers' Building at the St. Louis World's Fair. The booklet is issued in the interest of their Star brand Blocks, Pumps, Trucks and Sheaves.

Arkansas Retail Hardware Dealers' Association.

THE fifth annual convention of the Arkansas Retail Hardware Dealers' Association was held in Little Rock on the 8th, 9th and 10th inst., at the Hotel Gleason. The convention was by far the largest and most successful in the history of the association, and the members showed much interest and enthusiasm in the work.

President Jno. F. Maxey called the meeting to order on Wednesday morning at 10 o'clock. C. E. Taylor, secretary, announced that he had provided a register, in which he asked that the names of all members, as well as visitors, be recorded, and suggested that this register be used in lieu of the roll call. The suggestion was adopted.

W. E. Lenon, Mayor of Little Rock, welcomed the members to the city, J. B. Avera of Paragould responding on behalf of the association.

J. H. Boicourt was appointed sergeant-at-arms, and J. H. Graham assistant sergeant-at-arms.

Addresses by Jobbers, Traveling Men and Others.

J. J. Mandlebaum of the Fones Bros. Hardware Company made an address on behalf of the jobbing interests of the city, in which he expressed approval of the association movement and the desire on the part of the jobbers to work hand in hand with the retailers. He also referred to the entertainments which the jobbers had planned for the visitors while in the city.

M. L. Corey, secretary of the National Retail Hardware Dealers' Association, was called on and made a short address, in which he referred to the recent great meeting of the manufacturers and jobbers at Atlanta, where catalogue house competition and its effect on jobber and retailer was the most important subject for discussion. He said that the meeting meant much to the retailers, whose influence as a result of the formation of State and national associations was making itself more and more felt every day.

A number of short talks followed from traveling representatives and others, including Senator Sengel of Fort Smith, Mr. Hardy from Tennessee, Mr. Duley of the Duley-Mons Arms Company, Mr. Burris of the Rock Island Plow Company, F. W. Farley of the Jno. Deere Plow Company, Mr. Lofton of Hibbard, Spencer, Bartlett & Co., and Capt. A. F. Cook of Russellville. The convention then adjourned until the afternoon.

President Maxey's Annual Address.

The first business of the afternoon session was the reading by President Maxey of his annual address, as follows:

The year has been so short that I have not had time to learn to make a speech, but I will in a very few words give you all. We all have our ups and downs, in a business way. During this short year I hope all of the Hardwaremen of our State, and especially our membership, have done their duty in writing to our Congressmen to direct and encourage them to lend all their energy in an effort to defeat the Parcels Post bill, which the catalogue houses have been earnest in their efforts to get through that body for the benefit of the few and against the interest of the many. Whether all have written or not, I know that we have done something in this matter, and we should feel encouraged to make a greater effort in the future to do all we can to overcome this enemy, feeling sure that if we work with an untiring persistency we will come out victorious. You know that in union there is strength, and as this bill would affect the jobber very seriously, I think it time that the retailer and the jobber get closer together. Let them see if they cannot work together in the same harness, and maybe this would make a stronger team. Then all make a strong pull and a long pull for the objects which they mutually desire.

SELLING TO CATALOGUE HOUSES.

One of the first things the jobber wants to do is to see that all the jobbers, not some, refuse to sell the catalogue houses or furnish them in any way their Hardware, which I am confident some of the jobbers have been doing. I believe that with a united effort we will be able to overcome this great octopus, that is reaching out in all directions with its long arms for business which legitimately belongs to the retailer.

We have had a very pleasant year with the association, only one little ripple on the surface of the sea in the shape of one grievance reported to us, and I think that has been very satisfactorily settled with all concerned.

OUR ASSOCIATION HAS GROWN STEADILY

all along, as you will find from the secretary's report. It should continue to grow till every Hardwareman in the State becomes a member of the association. Then if a new man should go into the Hardware business he would be so lonesome running in a crowd by himself that he would be in a rush to send in his membership fee and join the association. If we only try, we can get them all, and if we don't at first succeed, we should try, try again, and work with an untiring zeal. I have done all the secretary has called on me to do, and more, and if the rest of you have done as much, I know we have done much good.

To bring about a more frendly relation between the jobber and the retailer I have written a number of jobbers to attend our meeting and meet the Hardwaremen

J. F. MAXEY, Ex-President.

of our State, so as to become better acquainted, and I wish for them a pleasant visit with us. Let us understand each other better, so that our future business relations may be more pleasant.

Secretary's Report.

C. E. Taylor, secretary-treasurer, presented the following secretary's report:

Believing that many members can do a great deal more than only a few can do, and that we must have members in order to accomplish anything as an association, I have devoted much time to a systematic effort to bring in new members, and the statistics show the gratifying increase of 42 per cent. The constant, persistent effort which has been made during the year has borne fruit. Many good merchants who were not with us during last convention are on our membership rolls to-day. The traveling man who calls on our trade as a rule is friendly to association work, and the names of several new members have come in from the direct influence of our indispensable brother, the drummer. A strong effort should be made during the new year to increase our membership, and the next convention should show fully as large an increase as we have to report to-day.

The trip of your delegate to the National Retail Hardware Dealers' convention was a very pleasant one for me, and the convention was a revelation of what strong organization can do, as well as a suggestion of what strongly organized Arkansas might do. The connection of our State association with the national body is of much benefit to us, more than appears on the surface.

The Grievance Committee had only one complaint of any note to handle during the year, and their report will deal with that matter.

RECOMMENDATIONS.

I recommend that the Executive Committee be increased in number to seven, and that the constitution be changed to provide for the selection of four members whose terms shall expire in one year and three who shall be elected for two years. Inasmuch as the retiring president each year leaves his office with some work not finished, and as the association should not lose the benefit of his experience, I suggest that it might be well to

C. E. TAYLOR, Secretary.

provide that the retiring president shall be made a member of the Executive Committee for one year.

PROGRAMME COMMITTEE.

The Programme Committee has given us a first-class programme. The only criticism that we think that you can with justice offer is that we have too many of the old speakers. We will be glad to hear them at all times, but an effort should be made to bring out some of our newer members. Let us have their ideas. On the other hand, the members should not hesitate to accept an opportunity to discuss before this convention such problems as may arise from time to time in their business.

CATALOGUE HOUSE QUESTION.

So much has been said on this question recently that extended notice of it here would be tedious to you. The jobbers and manufacturers in their conventions have not hesitated to discuss it, and have called to their meetings our national officers, in order that the plea of the retailers might be strongly presented. The issue between the retail Hardwaremen and the catalogue houses has been clearly defined. Retailers in every line of business should take it up. President Bogardus expressed the situation so clearly that I make the following extract from his address:

We are not here to ask that any man be driven out of business. We are not here to ask that any business enterprise be throttled, but we are here to ask that men who are seeking to break down the retail dealer in order that they may climb upon the ruins may be hindered from accomplishing their objects. We are here to ask that the help heretofore given them be withheld and that other considerations besides quantity regulate the price.

The Programme Committee has set aside a time for the discussion of this matter, at which time it will doubtless receive your consideration.

PARCELS POST.

In accordance with the request made at our last convention, I sent a copy of the resolution adopted by our convention relative to the Parcels Post Bill, and have replies from all but Senator Clarke and Congressman Dinsmore. The replies are all in the nature of a mere acknowledgment, with the exception of Congressman Little's, who said: "I am in hearty sympathy with the purpose of the resolution, and shall use my best efforts to prevent its passage so long as I shall remain a member of Congress."

I suggest that the association should commend Congressman Little for his stand in the matter, also that we express in a resolution our hope that our Senators and Representatives in Congress will unite in an effort to defeat this bill. The fact of the matter is that it is up to them. The catalogue houses and others who have vital interest in the passage of the bill are working to keep the measure alive and it will likely come up with renewed vigor at the next session of Congress.

INSURANCE.

Many of the older and stronger State associations have their own mutual fire insurance company. The matter is one which should be considered carefully by this association. I suggest the appointment of a committee to give the matter careful consideration.

Mr. Taylor then presented his report as treasurer, which was referred to the Auditing Committee.

What Can Be Done by Our Members to Create a More Active Interest in Association Work?

John M. Pittman of Prescott read the following paper on the above topic:

With what thought I have been able to bring to bear on this subject, I have reached the conclusion that as individual members we can do but little to create an interest in association work, but as an association of active, intelligent and determined members we can accomplish a great deal that will "create more active interest in association work." The individual member can do but little, but if we unite and act on the motto that "an injury to one is the concern of all," we can create that interest which will not only hold those who have already joined, but will induce all others, "who seeing our good works" will become members of our noble order.

WE MUST HAVE RESULTS.

Too many of us have stood still and witnessed with indifference the many abuses that have been laid upon our business by various and conflicting interests at a time when we felt that we did not have the power to offer that resistance which we were sure the occasion demanded. From 18 States, associated in our grand fellowship, comes the glad tidings that a vast throng of these trade abuses are being swept away as mists before the morning sun. These happy results are creating an interest that will be as lasting as the enduring hills. I ask your attention now to just a few things that will create a still more active interest in association work, if we handle them in an intelligent manner and with due consideration to the interests of all that may be in any way concerned.

CATALOGUE HOUSES.

We note with no small degree of satisfaction the interest that is being manifested by the different associations of jobbers and manufacturers in the direction of suppressing and curtailing the business of these "business pirates." It is the retail Hardware dealers who have created a demand for all the standard brands of Hardware. Since they have done this, for them to stand idly by and, without a word of protest, see the jobber and the manufacturer rob them of their well earned trade and turn it over to a lot of business cut-throats is to be knocked down and then lie still while your antagonist rubs dirt and dung into your hair. The jobber and the manufacturer are waking up to the situation since our organization has given them to understand that we know these catalogue houses can get their supply only through them and that we have determined that we will not handle their goods as long as they try to market their wares through these channels. Four of the leading wholesale houses of St. Louis, which until a very late date

made a business of supplying catalogue houses, now make pledges that they will do so no more. This is not only true of St. Louis, but it is true of most all other wholesale centers. Let us continue our demands and our subject question will be answered.

JOBBERS AND MANUFACTURERS.

In order that we may create a more active interest in association work, and hold that interest already created and undisturbed, we must have the rights and privileges between the retailer and the jobber more clearly defined and sustained. As an association we have heretofore declared that all manufacturers and jobbers of Hardware confine their business to Hardware dealers, and that each member of this association pledge himself to use every reasonable effort to enforce this demand. I regret to say that I have had complaints from some of the membership, with a statement that they did not feel that interest in our association that they otherwise would if we would put in motion some plan to enforce this resolution. Some jobbers go so far as to claim that it is no interference with our rights for them to sell any and all merchants at the same time they sell the regular Hardware

JOHN M. PITTMAN.

dealer. They also claim the right to sell the blacksmith. In some towns I find the dealer, as he understands it, trying to protect himself against this class of jobbers and withholding his business from them, while in other towns no attention is paid to it. It seems to me that this association should have some conference with the jobbers and reach some conclusion by which the rights of both parties could be determined and some measure agreed upon by which all parties would be benefited and none injured. There should be no antagonism, and if we properly understand each other there will be none.

Let us continue a more healthy and active interest by a proper observance of these things, and a determination to see for all that every interest is properly guarded, and we will without a dissenting voice praise association work. I am not satisfied with the objection to such an agreement, that it will not be enforced. I would remind you that many associations enforce demands against jobbers and manufacturers that are much more unreasonable than we are likely to make. I call your attention to some of the demands of the plumbers. Where is the jobber in plumbing goods that will sell to any one not recognized by the Plumbers' Association? Let our resolutions be fair and reasonable, and then enforce them.

CO-OPERATIVE FIRE INSURANCE.

Another thing that will help to create a more active interest in association work will be to do something that will show in a more tangible way that we are doing something that will benefit the association membership in other financial ways. I do not say that our State association is strong enough to start an insurance company of its own, but I believe it is; but I do say that we should take insurance with the National until such time as we shall start one of our own in the State. I do not hesitate to say from statements that I have seen that there is a saving of at least 33 1-3 per cent. Let us assist this company, and, by so doing, enlarge our own cash account, and this will lead us and others to a more active interest in association work.

BUSINESS AND SOCIAL FEATURES.

Over and above everything that I have indicated are the business and social features of the association. Among our membership are the brightest and best dealers in the State. We have only to engage one in a discussion of his business methods to learn more than the cost of attending the annual meeting. We also pick up a great deal of permanent value in regard to the different kind of goods, and the best place to buy them. It is worth more than the cost of the meeting and the membership fee to meet different manufacturers and jobbers and get acquainted with them.

JOIN THE ASSOCIATION.

Some time ago I read in one of the Hardware journals a statement that the retail Hardware dealer was like a bashful lover who was happy in sitting on the fence and seeing the girl he loved go by alone on her way home from singing school. He did not have the courage to ask to accompany her, but was content in seeing her pass. He may have been a good fellow, but as a beau he was not much of a success. There is the retail Hardware dealer who sees abuses he wants corrected, who would like to see reforms carried through, who hopes that trade conditions may be improved and the general business tone elevated, but who sits on the fence and sees the procession move by without the courage to join in an effort to effect the necessary reforms. He does not join an association, and to the extent of his ability and influence he deprives the association of his usefulness. Such a dealer may be a good fellow, but, as a Hardware dealer, he is a knot on a log.

THE COMMERCIAL TRAVELER.

Too much importance cannot be attached to the benefits that can be had through the traveling salesmen of the wholesale Hardware houses. Do not fail to mention some phase of association work to them, and you will always find them free to give a word of encouragement. This will be an opportune time to let them know that you are depending on them to talk the matter over with Mr. Jones, who is not a member of the association, and to see that he puts in his application for membership and attends the next annual meeting. These little attentions and courtesies will be sure to "create a more active interest in association work."

E. E. Mitchell of Morrilton, discussing the same topic, spoke as follows:

I think one of the surest things to create interest in the association, to help build up our association, is to follow every suggestion that the secretary might make. While the president is at the head of the association, as a matter of fact the secretary is more in touch with the work and is better posted than the others. So when he writes letters in connection with the work we should answer them promptly and fully. If he gives us a little list of dealers to write to, attend to it at once; don't put it off until the next day or the next week. I acknowledge that I have not done as well as I might have done, but I have usually attended to this pretty promptly, and shall do better in the future. Let us back up our secretary with our full support. In this direction lies much effective work.

Mr. Mitchell suggested that the Membership Committee be increased from five to 15. He said that the work should be divided as equally as possible all over the State, giving to this member a certain territory and to that member a certain territory, and so on. It is the only way that we can successfully increase the membership of the association. As the association grows larger the more easy will it be found to induce others to join. The mere fact that it is a large association carries with it a good deal of weight. We should increase the membership next year 100 per cent.

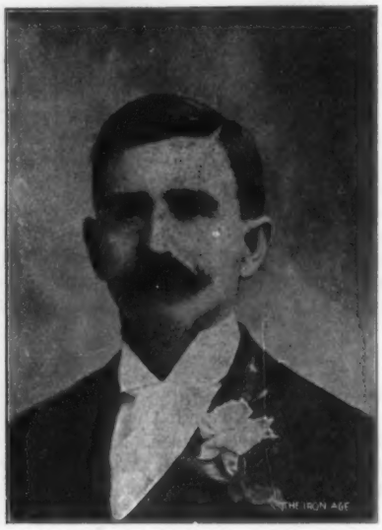
The Best Method to Keep a Well Established Business Up to Its Standard.

Hamp Williams of Hot Springs read the following paper on this topic:

Overbuying is one of the diseases of the Hardware business. It is like overeating or overwork to the human body. You may feel the effects many days hence, or it may possibly end in destruction. You should exercise good judgment and buy goods that you think are most suited to your trade and then push them. Keep your want book continually before you and increase your purchases in proportion to the possibilities of increase in trade, adding new lines as fast as your finances and trade prospects will permit. When you make a mistake and buy too much or get goods that are unsalable dispose of them as quickly as possible, because they are, like an eating sore, badly in the way and will spread if the remedy is not applied at the beginning.

SPECIALTY MEN.

Along this line it might be well enough to administer a purgative about once a year and follow up with a little quinine. I think there should be as near as possible one man for each line, which would necessarily depend upon the number of men employed and the number of lines



HAMP WILLIAMS, President.

handled, but give each man to understand that it is his duty at all times to keep thoroughly up on some certain lines and at the same time be so that he can work elsewhere when necessary. Have a Stove man, an Implement man, a Builders' Hardware man and, when possible, always refer the trade in his particular line to him. For instance, you go to the oculist to have your eyes treated, to the dentist to have your teeth filled and to Hot Springs for rheumatism and other ailments. Make specialty men of your clerks, and make them at all times keep their lines well sampled to the best advantage, so as to make each line attractive and inviting. Have your Stoves polished, your Implements set up in running order. Take the same care of your store as you do with your person. Keep it always neat and clean.

KEEPING TRACK OF CUSTOMERS.

The next point that presents itself to my mind is watchfulness and activity combined. See what is needed and do it. If, for illustration, a customer buys goods of you regularly and all at once stops buying, if you are a good merchant you will discover it immediately and undertake to ascertain the trouble and regain his patronage if possible. If a farmer buys goods of you one year, he will most likely continue unless he has reasons for quitting. If you have a good method, you will know your customers. If you sell a Wagon, a Buggy, a Mower, a Sewing Machine, a Range or a cook Stove, whatever brand you want to push, enter the purchaser's name, his post office address, the article bought, the price paid and the date of sale upon a book kept for that purpose, having separate pages set apart for each article. This, of course, applies to large items that you wish to push. By doing this you can tell at the end of the year how many and to whom sold, and what your profits were on that particular line. The names contained in this book are your customers. You might want to mail them a nice calendar or some little token of appreciation, and at the same time thank them for buying the article of you at a certain back date, &c. This book serves many purposes. If you are trying to sell Smith of Lone Star post office a Stove, for instance, you look on your book and see that Jones of the same post office bought one of the same stoves some time previous. You can use that as a lever to sell Smith, and you can protect yourself also against conflicting prices. When these articles need repairing you can look back and find a full description of the article he bought in your book.

If you have in mind some article you want to push, buy a small amount, sell it, keep the name of each purchaser and wait until they try it. If you find it good, buy more, referring your new customers to the old ones, giving names, dates, &c. By this method you can increase your business to any proportion you may desire. Under this head comes the watchfulness of your men and yourselves. See that your men carry out your instructions; see also that you instruct them properly; see that every article in your store is marked, the cost price delivered, if no more, but I would recommend the selling price also.

GET GOOD HELP.

If you want your business to keep up, get the best men in the country to help you. The President of the United States has plenty of time to go hunting and fishing, because he has good and efficient men at the head of each department. He has a system, a method and a way of doing everything. There is no retail Hardware store in this country which requires as much supervision as the running of this Government, yet a great many of us think our business would go to destruction if we were not present every hour and every day. That is proof that we lack method. The fault is our own.

FINANCES.

I want to call your attention, also, to the method of financiering. You should always know what you owe and when it is due. You should also know what is due you and when it is to be paid. You should know your ability for paying before buying. You should also know the way of collecting before selling. You should watch your percentage of profit, and should by all means know what portion of your profits goes for expenses to keep your business up to the standard.

There should always be a steady gain in your sales. With these points well guarded and with a well established business, there is very little danger of failure.

ADVERTISING, DANGEROUS AND OTHERWISE.

One other important point I wish to call your attention to is the method of advertising. Advertising is to your business the same as blood is to your body; without it you are dead. I assert that you can not succeed in business unless you advertise in some way. You may sell cheaper than your competitors. If you do, that is advertising within itself, and it is a very dangerous method. Your competitor can meet that class of advertising easily; you have therefore reduced prices on your goods permanently. You competitor has met the prices and you have lost your advertisement. Cutting prices for an advertisement is the most dangerous proposition confronting the retail Hardware dealer to-day. It will positively end in the destruction of your business if you keep it up. Sell your goods at a fair and reasonable profit. Do not sell one article for cost and another at double its worth; sell each at a fair margin and see that your customer gets what he buys.

If you will adopt this method and impress this on the mind of every man in your territory about once in every 30 days, regularly, and at the same time soliciting their patronage and calling their attention to the things you most desire them to know—special brands, goods that your competitors do not handle—and keep persist-

ently at it, you will find that "Cheap John" competitors and catalogue houses are not in step with you at all.

People, as a rule, are willing to pay a profit, but no one is willing to be charged extortionate prices. If you sell one item for less than cost you are compelled to get a double profit on the next. If you sell one customer at cost, in order to get his influence, you are compelled to charge the next too much in order to get your legitimate profit, and the man you robbed will tell his friends to keep away from you, while the influential man, the one you sold at cost, will only thank himself for his own shrewdness in buying and will only speak of it in a manner to his own credit. Do the right thing; establish a record for right doing, and the people will find it out.

Get them in your place of business; send word by Smith to Jones to come and see you; send him a letter asking him to come; send him a circular; send him another; send him a calendar; send one of your clerks to see him; send another clerk, and if all these fail, go after him yourself; get him in your store. Convince him that you are a square man and that you handle a good line of goods. The result is, you have won a customer, one that will stay with you. He was hard to break off from the other fellow; he will be the same by you.

Advertise in the newspapers; post the fences, old barns, logs, trees bridges and rocks. Keep your name constantly in the minds of the people. If you don't advertise you would be surprised to know how many people there are in your town and county that never heard of you. You think they all know you because you have been there so long; like a man winking at a girl in the dark, he knows what he is doing, but she does not.

A dead man is soon forgotten unless he was well advertised before or after his death. Some men die and their business continues to live; that's Armour. Some men live to see their business die; is that you?

W. M. Graham of Clarendon, Ark., also read a paper on this topic, as follows:

This, to me, is a hard subject to say anything about. To my mind, a well established business has been made such by methods peculiarly its own. No business can become well established and hold it unless it has been built up on honesty, fair dealing and a close application to the demands of the trade, and also promptness in service. There is no part of your business that should be looked after more closely than

YOUR PROMPTNESS TO FULFILL YOUR CONTRACTS,

for this alone will make you popular with your trade. Have you a well established business? If so, how did you get it? Did you get it by giving 14 ounces to the pound, or by delivering goods bought to-day four days later? Did you let your customer walk from the front to the back of the house before you greeted him? And then, with a grunt, did you give him to understand that his dollar was no better than his neighbor's, and if he didn't like your prices he could go elsewhere? Did you buy your stock in an offhand manner and without any idea as to values? Did you throw your Panama aside with a flourish at the entrance of a city lady, and squirt Star Navy at the flies on the floor when talking to her country sister? My opinion is that if you have a well established business you did exactly the contrary.

To you that were fortunate enough to be able to stock your store complete on entering business, I will say that you had some advantage of your more unfortunate neighbor, who had to dig from the start to be able to compete with you. He knows how his business was established, and, if he be level headed, he will still employ those methods that made him as he is. The methods used to establish a business are good enough to hold it where it is,

USING SUCH NEW METHODS AS THE SPIRIT OF THE TIMES DEMAND

to keep him in the lead. To a great extent this is an individual matter, and conditions have a great deal to do with it. Among some classes one treatment will win, and among others it will not do at all, and some other method must be employed; knowing when and how to apply these methods is the secret of the business man's success.

After all is said, uprightness in your dealings with your trade will win their respect and hold it better than any method available, as all classes recognize it, whether it be the prince or peasant, and will honor you for it. Sell only such goods as you can recommend and stand back of that if the sheriff closes your doors. Establish a reputation for doing things right and doing them in a hurry, and you will find that your business is well established and that the methods used will sustain it.

The session was then brought to a close with a few remarks from Mr. Corey, who complimented the association on the topics that had been selected for discussion and the able manner in which they were treated.

The morning session on Thursday was opened with further addresses from traveling men. Messrs. Sneed of Simmons Hardware Company and McNeely of the International Harvester Company of America were called upon and responded briefly.

A Catalogue for Meeting Catalogue House Competition.

Mr. Avera remarked that Hibbard, Spencer, Bartlett & Co. had a proposition in the line of a catalogue that struck him very favorably, and asked that Mr. Lofton explain it to the association. Mr. Lofton said it was a catalogue that could be used among all the members. His company proposed to arrange it for them, having each merchant's name printed on his catalogue, and by combining with all the members the catalogue could be gotten out at a nominal expense. He thought it a very good idea to offset catalogue house competition by sending these catalogues over the country, touching this or that merchant's particular territory, as the case might be. The idea was to put in them, mainly, such goods as are largely sold by the catalogue houses, quoting prices that would meet the catalogue house prices. The catalogues would cost about 2 cents each.

Mr. Corey thought a book of this kind would be of great advantage. He stated that there were some progressive dealers who had taken the trouble to get up and distribute a catalogue showing a full line of their goods. They found by a careful distribution of these catalogues that their trade increased.

Mr. Pittman said that the only objection he could see to it was that if the same catalogue is handled by different towns that are close together, with identical prices, it would look just a little like a combination. For instance, if two or three houses in the same town should adopt the same cuts and the same catalogue and the same prices, people would say, "Those fellows have got together on prices."

Mr. Lofton suggested that instead of issuing one form of catalogue they could issue two forms, which might overcome the objection of Mr. Pittman.

Hamp Williams suggested that some dealers had to sell certain people on time, and would not sell as cheap to this class as for cash. Of course, the cash price would necessarily have to be put in the catalogue. Then the credit man would raise a howl because of the difference in price. He liked the idea of a catalogue if this would be overcome.

Mr. Corey suggested it might be done in this way: You might have one Sewing Machine at $9 and others as high as $30. The idea is to impress upon the people that you have goods as cheap as anybody. There are a few things we must meet the price on. Advertise just such things. If you will examine the catalogues gotten out by these catalogues houses you will find the prices are identical. Why? Because the manufacturers sell them on certain restrictions. Now, some merchants make a mistake in asking too much on certain goods that they have a bargain on. It may be the jobber has made this special price to enable you to meet the catalogue house competition. When you buy an article cheap, sell it cheap. Ask a reasonable profit, but don't stick on too much.

Hamp Williams: If you buy an article cheap, why should you go to work and give away your profit? There are a good many articles that you have to carry a long time, and maybe make no profit on them at last. There has to be something to offset this loss.

T. B. Stewart: I think the solution of the catalogue proposition is to print them without any prices and then insert your own prices, just such as you see fit to insert. Take a Sewing Machine. There are a great many

different kinds. It depends largely on the description as to its worth.

A large number expressed an interest in this catalogue idea of Hibbard, Spencer, Bartlett & Co., but no action was taken, and it was left with the members to talk further about the matter with Mr. Lofton.

Business Hints in the Hardware Line.

C. T. Rosenthal of Batesville read a paper on this subject, as follows:

WHAT TO SELL.

A Hardware dealer should handle everything that properly belongs to his business, even some lines that do not pay, provided they belong to his business, and especially if there is no one else in his town that handles them. As an illustration, will mention Door, Cabinet and Padlock Keys; this line does not pay, would say they represent a loss; the time it takes a customer to select one, the number of times they are returned, &c.; if there is a locksmith in town this line should be discarded, otherwise not.

I take it that the Hardwareman should keep a good assortment in Hardware proper; the people expect to find these goods at his place and should not be disappointed. Whatever there is handled, there should be a good assortment; this will give a store a prestige worth something. A general store handles Carriage Bolts, say ¼ x 2 to ½ x 4; a Hardware store should have, say, ¼ x 1 to ⅝ x 16, and nearly all the intermediate sizes.

If there are goods that are slow, even very slow sellers, if they are part of a line of good goods (say, Carriage Bolts, ⅜ x 8, or Corner Chisels) they should not be discarded; they help to sell other goods.

Agencies or exclusive sale of well-known and well advertised articles of merit should be obtained. This part of the business is very satisfactory, and should be pushed to its limit.

Outside of Hardware proper, the field is open to a good many other lines; whether they are in the Hardware line or not makes no material difference. Where the groceryman sells Bar Iron and Field Hoes, the druggist takes orders for Iron Roofing, and the book store sells Curry Combs, Wrenches and Heating Stoves, then the Hardwareman should not hesitate to handle any line that after investigation promises to be profitable.

WHAT TO DISCARD.

When any line of goods becomes unprofitable, either from slow sale or low per cent. of profit, then the time has come to investigate.

The course to pursue will largely depend on local conditions. If it is found that a line is going out of use, it should be discarded. If it is found that decreased sale is caused by too many merchants handling same, and the article is not strictly in the Hardware line, such as Tinware, &c., discard. If, however, the goods in question are properly in the Hardware line, look this matter up carefully and find where the trouble comes in; you may be paying too much, or some other make may be more profitable or more satisfactory to your customers.

Another case: Where it is found that the catalogue houses advertise some goods in your line which, at the price charged by the jobbers, you cannot sell at a reasonable profit, drop these goods, and replace them with some other good make not sold by catalogue houses.

As to what to handle and not handle, do not take the traveling salesman's word, but use your own judgment. I remember a salesman for a cheaper class of Plows, not finding me very enthusiastic about his goods, told me: "You have to have them, the country needs these goods." I answered that there was no trouble about that—there were six other stores in town that handled these goods, and if any one wanted them he certainly could get them, so there was no special necessity for me buying a carload or more and carrying one-third or half of them over for next year; and the salesman did not get the order.

NEW LINES TO HANDLE.

To adopt new lines of goods requires a great deal of care, and local conditions should be well considered. It should be ascertained how many stores in town handle these goods, whether they have a good assortment of them or not, and the probable demands and profits. In deciding whether to put in a new line or not, the dealer's own judgment should be used. The salesman who wants to sell to the dealer looks at this question in a different view, and proper allowance should be made on this score. It is easier to buy a new line of goods than to discard them should they be unsatisfactory.

Having, after proper investigation, decided to add a new line, quotations should be had from different houses. Not being otherwise posted, prices may be too high and undesirable goods may be bought if purchases are made from the first man that comes along.

A moderate stock of these goods should be bought, and quantities and assortments increased as demands of customers dictate. Slow sellers, not strictly in the Hardware line, even if they promise a good profit, should not be added to the stock.

What Are the Best Methods of Extending Credit and Making Collections?

On this subject J. L. Davis of Magnolia read the following paper:

After an experience of almost 20 years in a retail store, occupying successively every position from boy helper in a country store to head of the firm, I am persuaded that lack of system is the rock on which many a retailer's craft breaks and goes down; and in no other department is it responsible for more failures than the granting of credit and making collections. In no other department is the management so loose and in no other is it more essential that a strict supervision be maintained. The Hardware store is essentially a credit store; not in the sense that the general store is sometimes considered, but we are called upon by the very best class of trade for accommodations, ranging from one to twelve months; and while it is thus so considered, it can be conducted upon a safe, sound basis without material loss.

No laws of State can suffice, and credit must, of necessity, be entirely independent of legislation, consequently after all rules and regulations have been exhausted the credit man must at last resort to facts obtained by diligent inquiry and personal characteristics of a customer who applies for credit. When personal knowledge is limited, or the customer is a stranger to you, do not hesitate to ask for reference (or, better still, demand security), and add to the knowledge obtained from such references a well trained judgment of human nature.

An organization of the local merchants of the town for mutual protection is quite often beneficial, but is not always possible; and even then the individual must exercise a certain amount of fine discrimination and knowledge of his fellow man.

A LARGE PERCENTAGE OF LOSSES IS THE RESULT

of overzealousness in business, as well as inability to say no. I know it does seem to the merchant that he has developed into the basest ingrate when he has to refuse credit to a customer who has spent his cash, as well as used his influence for the house, and who only asks for a small amount for a short time. But if the party is unworthy of credit say no, even at loss of his business. When a customer proves to you that he is not honest and trustworthy he should not be given a line of credit, except when ample security is offered. Clerks should not be given *carte blanche* in matters of credit, but when application is made should refer same to the head of the firm. Due regard should be given to a man's ability to pay, but the vital part to consider is honesty of purpose, as shown by previous conduct. A limit should be placed upon most accounts and the bookkeeper required to notify credit man as soon as same is reached, whereupon the customer should be required to give additional security.

In the sales of all Vehicles and Implements it is much better to take notes retaining a lien on property purchased, unless customer is known to have considerable property that would not be subject to schedule.

A MISTAKE

that is made by almost every retailer is in not having a firm understanding and making a specific date for payment when sale is made. When the account or note is due a statement should be sent, followed by another in a reasonable time, and this in turn by a personal call of the collector; for in this way customers are made to

understand that we are doing business in a manner not calculated to hold out inducements to dead beats.

FAMILIARITY WITH CUSTOMERS' FINANCIAL CONDITION.

The retailer should have his credit man familiarize himself with the financial condition of every cash customer of the store when possible, so that he may be able to answer affirmatively or otherwise immediately on request for favors. Upon his ability to do so depends the value of such person to the firm. We are likely to be persuaded against our better judgment when we stop to listen to the oily tongue of the would-be "dead beat."

INCOMPETENT COLLECTORS.

In the matter of collection many of us leave it to incompetent persons, when we should exercise a supervision over it ourselves. We should look after our collections as systematically as we do the purchase and sale of our wares.

As stated in the outset, we should have a distinct understanding as to when the account is to be paid and have the bookkeeper mail statement on such date, to be followed by others of a more "pressing nature" if not responded to in a reasonable time. All accounts should be closed by note if not paid at maturity and security exacted. This will prevent disputes months afterward and retain the friendship of many who might otherwise become enemies of the store. The local bank can be made a help in collecting notes from your sensitive customers, and will cheerfully do so without cost to you. The average customer knows better how to "stand you off" than the banker, and will pay promptly in order to establish a reputation for debt paying.

A regular collector should be kept and should be sent regularly to see the delinquents, which person will be found to pay better than the best salesman in the house, although his work does not show up so well, and frequently seems to be an unnecessary expense that might as well be dispensed with without material loss.

DRAWING OUT PROFITS.

When times are good retailers are liable to neglect their collections, for the reason that they do not need the money, and are afraid of giving offense in asking for it. To avoid such, the merchant should draw out his profits annually, leaving only enough to carry on the business in a conservative way. On the other hand, when collections are slow we are liable to become discouraged and fail to make the effort necessary. An account can frequently be secured by granting a longer time, and even, by lending a small amount in cash, obtaining a lien on personal or real property.

At the end of the year charge off all doubtful accounts and turn over same to the collector, with instructions to collect or compromise. In this way they will not be lost sight of by being swallowed up in the new year's business.

Finally, one idea should be borne in mind constantly: COLLECT WITHOUT LEGAL PROCESS.

Catalogue House Competition.

This important subject, from the jobbers' standpoint, was discussed in an address by R. W. Shapleigh of the Norvell-Shapleigh Hardware Company, St. Louis, as follows:

The catalogue house question has assumed a new and very interesting aspect in the last six weeks, and is, indeed, the most vital question to be solved by manufacturers, jobbers and retailers in Hardware. A very positive and harmful condition confronts us, and the loyal co-operation of jobbers and retailers is needed to combat it and to lessen its evils.

The question before us to-day is not a new one; it has been under discussion by Hardware jobbers' associations and Hardware retail associations for five or six years, but mostly in a negative way, and with the idea that this great bugaboo must not be talked about or considered, for fear that such a course would advertise the catalogue houses, and thus throw more business to them. Such a course was weak and has resulted in no hindrance to their enormous growth. The Hardware trade has now awakened from their peaceful dream, late, though I am confident in time to check and minimize this evil. Talk it, give the subject publicity; talk it early and late to every one you come in contact with in your stores, on the street, in your houses. Make it the subject you are "cranky" on. Make it your "hobby," and ride it hard and fast, and all the time talk it to your friends in your town and to all your customers. Make them, by your personal influence with them, promise to give you a chance to sell them before they will purchase anything from catalogue houses. Then, if you can't sell them without loss, call on your jobbers to help you out. We will do it. Our house was the first to open this discussion on the lines of publicity and open discussion, and we certainly will not fail to help our retail friends in carrying out a reform that we have started anew.

The first duty of a jobber is to his customer. Why? Well, it's not pure philanthropy on the jobber's part; we need you, we need your trade, we make our money on your business. What injures you injures us. Why should we not help you all we can?

IN ADVOCATING THE LARGEST POSSIBLE PUBLICITY OF THIS CATALOGUE HOUSE QUESTION

I have had in mind the opinion that the customers of the merchants in any certain town do not realize the harm they are doing their community by sending their money and orders to catalogue houses. When they see a catalogue house price that is lower than their merchant's price on any article they are immediately dominated by the intuitive motive of selfishness and greed, and the feeling that they are smart and are benefiting themselves by sending the order to the catalogue house. But are they doing so when the question is looked at in its broader aspect of the good of the whole district? Suppose a considerable number of any community were to adopt this catalogue habit. It is evident that the business of the community would quickly decrease, the ability of the merchant to barter with the farmers of the section would be curtailed. The traveling salesman would "pass the town up," and the trade of the whole section would languish. The welfare of the dwellers in any community is thoroughly mutual, and is founded on the prosperity of all classes. The success of the farmer is necessary to the merchant,

BUT THE SUCCESS OF THE MERCHANT IS ALSO NECESSARY TO THE FARMER.

This evil is more prominent in the Hardware trade than in others, but, remember, it is fast creeping into other lines and will soon affect all retailers. Would your customers in your section go "catalogue crazy" if the above ultimate condition was clearly shown them? There are many other good arguments to show that it is not to the best interest of any of your friends to patronize the catalogue houses. The chief of these is the item of the cash payment in advance. There is a story current that the magnificent building of one of the catalogue houses in Chicago was paid for by remittances that were never identified. Suppose the article bought by a cash payment from one of these houses turned out to be not satisfactory? Please do not think I am trying to give advice. I would not presume to in such a gathering, and the retail merchant has had more advice than aid given him. I am simply trying to show why I think a person is foolish to patronize a catalogue house at any price.

Allow me in conclusion to compliment your association on its rapid growth in members and influence. I am sure that all the Hardware dealers in the State will join your ranks when they fully realize the good work you are doing.

Mr. Corey, from the retailer's standpoint, spoke as follows:

The business world has at last recognized the injustice of the special favors given four or five large retail houses whereby they are put in position to demoralize and render unprofitable the trade of 25,000 retailers and over 250 jobbers. It is not what they sell that hurts as much as the dishonest methods they employ in quoting extreme prices, often on goods they do not even carry, expecting to substitute brands of unknown origin and character under extravagant guarantee that they well know they will not have to make good, on account of distance, and because their customers are unable to explain by letter and maintain their rights against special men

who are employed to use their entire time in avoiding such responsibility and expense. These mail order adjusters, it is said, become so expert that they usually succeed in convincing a complainant that he is the one to blame for any unsatisfactory results, and then by a system of flattery and soft soaping they often sell the same man over again, in spite of former experience. Such consumers as buy on account of being rated at home as deadbeats, chronic kickers, dishonest, &c., will always patronize foreign institutions rather than home, and we don't care if they do. But there are good, intelligent, honest farmers and mechanics who read and learn, who prefer home buying on equal terms, that are sending away for their supplies because

WE HAVE ALLOWED OURSELVES TO BE UNDERSOLD,

and they consider it their privilege to buy where they can do the best. Can any one deny them the right?

The retail merchant must show he has just cause for his existence. He must meet open competition or suffer through comparison. We must study the prices of these catalogue houses, and if his jobber or manufacturer will not sell him so he again can sell at a fair profit, he must decide against being discriminated against, and should secure an adjustment or substitute something of another make. This is a common sense, business view of the situation. Already many manufacturers have suffered more than they know because their products are becoming unprofitable. It is the profit attached to the sale that interests the retailer and makes him push for trade. It is the profit that makes the factory grow, that urges the inventor, that promotes enterprise. It is the profit that stimulates the farmer, the mechanic, lawyer, doctor, teacher, even the preacher. It is the profit that influences the nation's prosperity and the advance of its people. If the laborer is worthy of his hire, the merchant is entitled to his profit. Let a people figure only to skimp and save, and vim, vigor and progression gradually depart.

It has always been conceded that a person who may invent a genuine improvement should be protected in reaping whatever benefit may result from its introduction and sale; thus you see the patent laws recognized and enforced all over the civilized world. The author can copyright the product of his mind and pen. All along the line is recognized the justice of the principle

THAT HE WHO SOWS SHALL BE PROTECTED IN THE HARVEST.

How is the merchant? It takes expensive advertising, intelligent study, push and hustle to introduce and establish a reputation and demand for a new article. The expense and work must be done with the expectation that future sales will justify the effort. Not only this, but the merchant must identify his own reputation, his own best judgment, and unite with the manufacturer in pledging a responsible guarantee. The moment a demand is created, a reputation established, the catalogue house steps in and virtually says: We will buy a larger quantity; we want a much lower price; we will advertise and sell at the same price you have been making these retailers pay.

Is this an absurd proposition for a manufacturer to consider or accept? Is he thinking of the retail merchant when he sells this competition (even at the same price), when he knows that absolutely the only way they can sell is by cutting the price? Is not the retailer justified in demanding an even basis? Given equal price, equal terms, equal privileges, the catalogue house proposition becomes as harmless as a rabbit.

Never in the history of the world has the rule, competition must be met, applied with more force than today. The man, woman or child who does not read is a marked curiosity. Nearly every home contains a book from a catalogue house styled "the great price maker." People are advised to refer to them to prevent local merchants from overcharging. On such specialties as are well known and standard, that are sold in every store, an extremely low price is quoted, sometimes even less than the catalogue house cost. Why? To discredit and discourage the local merchant, to make his business unprofitable, to prove their lying assertion that everything they sell is based upon one little, puny margin of profit. To build up themselves by tearing an established business down.

If there was only genuine benefit for the consumer then our complaint would be founded upon selfish grounds.

LET US COMPARE THE TWO SYSTEMS.

The catalogue houses of Chicago claim to employ about 10,000 people. We are told that the wages of 75 per cent. are less than $12 per week; in the city this means bare subsistence. Less than 5 per cent. of the employees are married; they can't afford to be. There is very little chance for advancement and less for development, and yet they say they did $55,000,000 business last year. This would have represented 2200 retail merchants doing $25,000 each. They would employ 10,000 clerks, paying over $15 each. They would occupy 2200 store rooms, 200 homes, maintained and educated 6000 children, paid 53 times more taxes, 500 times more for local improvement, church and school maintenance.

The retail system offers a thousand times more opportunity for embarking in individual business enterprise, places the highest fruits of success within the reach of every worthy, honest, ambitious toiler. These 2200 merchants live in and are identified with the progress of perhaps many different communities, and are a vital necessity to the continued life and desirability of our smaller towns.

The actual expense of running the four or five catalogue houses and the 2200 independent stores, when it is considered that their advertising alone costs them about $5,000,000 (their own estimate), is very small. When the vast amount of returned, damaged or unsatisfactory goods are considered, with the attendant expense of adjusting, we have a decided advantage. Every catalogue house has a large claim department, and it is always busy.

The manufacturer or jobber who sells direct is counted a demoralizer, but here is a factor who sells $55,000,000; its only claim for existence is based upon price, prejudice and deception. We have only recently gone through their buildings and noted the stock they carry, and their manner of doing business. We have single jobbers who carry more stock and sell three times more Hardware than all of them combined. We have retailers who will not suffer by comparison, and yet under present conditions they are able to make their demoralizing influence felt all over these United States. They say they feel friendly toward the retailer, but the jobber and his salesman are useless, expensive, unnecessary, and they propose to drive them from the commercial field. The retailer has been unable to figure that he can dispense with the jobber, and he is legitimate and of great advantage when he confines his efforts to proper channels. The recent waking up has shown

THE RETAILER AND JOBBER EQUALLY AFFECTED

and equally interested. The catalogue houses began this fight when they cut our prices and named unprofitable conditions. They tell us if we attempt to protect ourselves they will advertise everything at cost and spend millions to render our business unprofitable.

Gentlemen, they have already exhausted nearly all their ammunition. I believe we should fight the devil with fire. Let price meet price and proclaim it from the housetops. Don't you feel like a man when you greet your customers and show them goods priced right? Don't you feel humiliated and guilty when you have to explain and apologize? I favor the manly way, but the loss must not rest upon the retailer alone. The jobbers (some of them at least) have flirted with this notorious dame, and now we demand that they step over on our side, furnish us goods at a price that will enable us to sell our customers at a profit, meeting catalogue prices, no matter what they may be.

This is not unreasonable. It is the jobbers' first duty (they tell us) to protect their customers. It is the retailer's first duty to hold and supply the wants of his community on a fair, honest and competing basis. This we should resolve to do and, unitedly, face and condemn any competition that stands in our way.

ONLY ONE PATH CAN LEAD TO SUCCESS.

Individually we have no power, no influence, no concerted action. Through association alone can these ques-

tions be met and solved. Every retail Hardware dealer must accept a share of the responsibility whether he joins us or not, for our success or failure will affect his accordingly. How important, then, that you impress upon your neighbors the desirability of thorough, intelligent co-operation.

Let us go out from this convention with the firm determination to enlist new recruits, to energetically sustain our State and National work, and individually see that foreign competition must contend for every sale it makes in your locality.

Following Mr. Corey, W. T. Avera addressed the convention in part as follows:

Whatever may happen to commercial life in this great country of ours, reasoning from its past history, cannot be else than a link in the chain of evolution and advancement; a chain, many furlongs of which have already been woven to the admiration of the entire world. It is unnecessary to take up with you men, every one of whom is familiar with the giant strides that business has taken in the last decade, the details of this advancement; but will you not agree that the business world is in the process of consolidation, consolidating that which is good and placing it in a better condition to fulfill its mission of serving humanity and rewarding its servants, and casting off that which is useless and unprofitable? If this be true, then let us see to which class we belong. Are we useful and necessary to our fellow man? If so, then no power under heaven can do away with us. If we are a useless feature of the business world and can be dispensed with properly to the masses, then there is indeed danger ahead; but no sane man will believe that.

So long as there is a demand for merchandise and a supply to be had, just so long will the retailer exist. In my humble opinion, this same condition governs the catalogue house. I believe they are here to stay, although the fight, now in its infancy, may change the entire status of present conditions of catalogue house, jobber and retailer. Yet each one may come out of the game in better conditions than now exist.

THERE IS ONE THING, AND ONE THING ONLY, THAT RETAILERS ASK IN THIS MATTER.

Give them that, and they do not fear catalogue houses. That one thing is to get their goods as cheap as the catalogue house. That is the key to the situation. Before the adjournment of this meeting it is our duty to tell this to our jobbing friends and manufacturers, and tell them in a way that will leave no room for doubt as to our standing about it. If this catalogue house competition continues, it may be necessary as a matter of self preservation for the retail Hardwaremen of this country to establish their own buying and assembling agencies in the principal markets of the country, that they may go to these factories with orders that will shine equal, or even outshine the plums that the catalogue houses have to offer them. I say to the wholesalers that this is not an impossibility, and it remains for them to prevent it from being a necessity. I contend that

THIS THING IS UP TO THE JOBBER

to solve. Jobbers are advising the retailer by speech and by letter to enlarge the variety of his stock, to adopt more modern business methods. Let us say to them that we will do this to the very best of our ability, and in return we ask of them to be placed on a par with our competitors in the price we pay for goods. The retailer will never be able to repay the jobber the debt of gratitude he owes him. Without the liberal terms they extend to us on a great variety of goods, I dare say a large percentage of retailers would have to confine their business to such narrow limits that there would be no profit for them. The jobber is as necessary to us now as is the demand for our goods. It is up to them to keep themselves so. I do not believe that any retailer wants a change from the present source of supply.

In this connection it may not be amiss to call your attention to one of the changes that seems to be taking place in the Hardware business, and one that may have something to do with the solution of this catalogue house question. It is this: On account of the vast number of articles now included in the line of Hardware specialty jobbers are springing up all over the land. These special houses should be able to supply the one article they give their entire attention to at a less price than a jobber whose stock embraces so many lines. Take, for instance, the greatest wholesale city in the world, the city of New York. I am told that it is now impossible to buy a complete line of Hardware from any one wholesale house there. Will this or will it not be the history of our large Hardware houses?

These things, though, are only food for thought. To get back directly to the catalogue house, I will end by saying that in my opinion we should take some decided tion on the subject. For my part, I will be satisfied with a resolution approving what has already been done by the national wholesale and retail dealers, pledging ourselves as a body and individually to leave the matter with them for the present and give them our hearty support.

J. M. Pittman offered the following resolutions:

Resolved, That a vote of thanks is hereby tendered R. W. Shapleigh of the Norvell-Shapleigh Hardware Company and M. L. Corey, secretary of the National Retail Hardware Dealers' Association, for the interest they have manifested in coming so far in response to an invitation to read papers relating to the business of the catalogue houses; and it is also

Resolved, That we recommend to the committee of jobbers and manufacturers who have in charge the catalogue house question that it is the sense of this association that some means should be adopted by which standard brands of hardware should be kept out of the hands of the catalogue house.

An interesting discussion followed, in which Messrs. Pittman, Mitchell, Maxey, Corey, Taylor, Graham, Williams, Shapleigh, Stewart and Jackson participated. Among the points brought out in this discussion were the following:

When a jobber furnishes a certain article at a special price to meet the competition of catalogue houses the merchant should not attempt to get more for it than it is intended to be sold for.

Do not push the sale of catalogue house goods, but keep them in stock, so that people may know that you have them, endeavoring, at the same time, to show wherein it is better to buy goods of higher quality.

Keep the catalogue house books at hand, so as to compare prices when attention is called to them.

Catalogue houses are not legitimate distributers of goods, and should not be supplied by jobbers or manufacturers.

Manufacturers should define the catalogue house, whether a jobber or a retailer.

Don't let an opportunity for a sale go from failure to meet the catalogue price.

Go to your competitor and make him understand that you are not fighting him when you make an occasional low price to beat the catalogue house out of a sale.

Give the movement for the correction of catalogue house abuses all the publicity possible. Make the farmer realize that in the long run the encouragement of this competition is not to his interest and welfare.

Catalogue house customers are frequently "hang-up" patrons of the local retailer.

Many people are misled by the catalogues. Educate your trade on this point.

Jobbers must furnish goods at prices which will enable retailers to meet the quotations of catalogue houses.

Committees for 1904-1905.

President Williams appointed the following committees to serve during the ensuing year:

INSURANCE: J. M. Pittman, Prescott; C. T. Rosenthal, Batesville; R. H. Strong, Ozark; H. W. Patrick, Russellville; L. K. Mandlebaum, Little Rock.

FRATERNAL RELATIONS: J. H. Crouch, Augusta; Manly Fox, Clarksville; L. A. Morgan, Victoria; P. J. Tidwell, Buckner; A. J. Sisney, Atkins.

PROGRAMME: E. P. Gaines, Lake Village; W. A. Jackson, Dardanelle; H. E. McRae, Arkadelphia; J. B. Avera, Paragould; E. D. Bracy, Little Rock.

GRIEVANCES: D. E. Watson, Hamburg; W. M. Harrell, Conway; J. P. Simpson, Malvern; K. G. McRae, Hope; W. V. Hamilton, Clarksville.

TRANSPORTATION: F. C. Stearns, Hot Springs; Robt. Conn, Stuttgart; R. N Vail, Morrilton; W. J. Chatfield, Texarkana; J. C. Barlow, Helena.

MEMBERSHIP: E. E. Mitchell, Morrilton; C. F. Wingfield, Hope; W. E. Dean, Portland; C. J. Crane, Batesville; W. E. Watkins, Mena; S. R. George, Magazine; W. T. Avera, Pocahontas; J B. Hurley, Warren; L. D. Smith, Stephens; C. B. Winburne, Coal Hill; R. P. Allen, Van Buren; W. M. Graham, Clarendon; A. C. Ward, Beebe; J. H. Morgan, Camden; R. F. Roys, Russellville.

Mutual Insurance.

The Committee on Mutual Insurance reported as follows:

With the limited information at hand we are not prepared to advise the incorporation of a mutual insurance company, but we feel confident that there would be a great saving in premiums if such a company was organized.

We would advise that a committee be appointed to fully investigate the matter and report their findings to the annual meeting in 1905 with some plan for organizing a mutual company if they deem it feasible and advisable. We find that several of the State Hardware mutual companies have been doing a safe and satisfactory insurance business for several years at a saving of 25 to 35 per cent. on premiums and at the same time laying up a safe surplus fund to meet emergencies. We also find that the National Retail Hardware Dealers' Association organized a mutual fire insurance company last year, which is doing a good business. We would advise that our membership take insurance in some one of these companies.

From such information as we are able to obtain we feel safe in saying that the Hardware risks are less hazardous than the average mercantile stocks, while the old line companies are charging us as much or more than the ordinary risk. It is therefore incumbent upon us to seek a way of escape from these exorbitant rates.

Resolutions.

The following resolutions were adopted:

Resolved, That the thanks of this association be extended to *The Iron Age* for special courtesies shown by them during the year that has been finished. Especially do we thank them for the publication of the 1903 minutes.

Resolved, That we extend the thanks of this association for courtesy extended by the following trade journals: *Tradesman, Iron and Machinery World, Hardware Dealers' Magazine, Stoves and Hardware Reporter*, and *American Artisan*.

Resolved, That the thanks of this association be tendered to each firm which advertised in the 1904 Official Programme. Inasmuch as the proceeds of the publication of this book go to defray the legitimate expenses of this association, we recommend that the secretary be instructed to write each advertiser, giving a copy of this resolution.

We recommend further that the secretary be requested to issue a similar publication next year. This committee thinks that the secretary need have no fears that the members of this association will remember in a substantial way each firm which has advertised in the Official Programme.

Resolved, That the thanks of this association be tendered to National Secretary M. L. Corey for his presence and his helpful work during the convention.

Resolved, That we extend our thanks to the *Daily Democrat* and *Daily Gazette* for their full reports of this convention.

Resolved, That our thanks be tendered to the St. Louis, I. M. & S. Ry. Company, Rock Island-Pacific Ry. Company and the St. L. S. W. Ry. Company for reduced rates.

Resolved, That the thanks of this association be tendered to the W. W. Dickinson Hardware Company and the Fones Bros. Hardware Company for the magnificent banquet given this association Thursday evening, June 9.

Resolved, That as a body we express our appreciation to the distinguished gentlemen who were the speakers at the banquet.

Resolved, That our thanks be extended to the following firms for the very pleasant evening spent as their guests at the comic opera at Forest Park: City Hardware Company, Voss-Barbee Mfg. Company, L. R. Tent & Awning Company, Arkansas Carpet & Furniture Company, Duley-Mons Arms Company, Jones House Furnishing Company, Chas. T. Abeles & Co., Foster Hardware Company, Bracey & Sanders, Dickinson Carriage Company.

Resolved, That our thanks be tendered to the National Cash Register Company for the stereopticon entertainment and the lecture by their Mr. Ryan. This feature was very much appreciated by all our members.

Resolved, That the hearty thanks of our association be tendered to L. D. Gleason, proprietor of this hotel, for the use of this handsome and comfortable convention hall.

Resolved, That this association request the publication in the *Gazette* of the toast at the banquet by J. N. Heiskell on the subject "Hardware in History," and that it be published as a part of the proceedings of this association.

Resolved, That this association indorse the course pursued by the Prescott Hardware Company in the management and conduct of their grievance, which was satisfactorily adjusted at this meeting, and we hereby commend their president, J. M. Pittman, for the fairness shown in this controversy.

Resolved, That this association request all manufacturers and jobbers to confine their sales to Hardware dealers who carry a full line of Hardware. We realize, however, that in some towns they should have the right to sell general stores. We request, however, with what we deem good reason, that all jobbers make lower prices to the exclusive dealer than are made to general stores.

Resolved, That the retail Hardware dealers of Arkansas, in convention assembled, note with pleasure that the dealers of Texas have an organization. We feel that on many matters our interests are identical and will welcome their co-operation. We respectfully suggest as a means to this end that they consider the advisability of affiliating with the National Retail Hardware Dealers' Association, and believe such a step would be of decided mutual advantage.

Resolved, That this association take the occasion to note with no small degree of pride and satisfaction that the banquet tendered by W. W. Dickinson Hardware Company and Fones Bros. Hardware Company to this association was free from all kinds of intoxicating liquors. We take this as a strong recognition of a healthy public sentiment in favor of temperance and a mark of the high order of the citizenship of our association.

Election of Officers.

The following officers were chosen for the ensuing year:

PRESIDENT, Hamp Williams, Hot Springs.
FIRST VICE-PRESIDENT, Thomas B. Stewart, Newport.
SECOND VICE-PRESIDENT, R. P. Graham, Fordyce.
SECRETARY-TREASURER, C. E. Taylor, Little Rock.

New Members.

The following new members were added to the rolls:

R. D. Jones, Magazine.
L. A. Morgan, Victoria.
N. E. Watkins & Bro., Mena.
Waldron Hardware Co., Waldron.
Brown-Miller Hardware Co., Van Buren.
Gowdy & Galloway, Little Rock.
Patrick Leonard Hardware Co., Russellville.
W. F. Stanley, Levy.
Benjamin Hardware Co., Texarkana.
Citizen Hardware & Furniture Co., Augusta.
Gaines Hardware Co., Lake Village.
I. L. Hight, Mulberry.
Cook-Crouch Furniture & Hardware Co., Batesville.
A. D. Malone, Plumerville.
H. Watson, Jonesboro.
H. Hankins Hardware Co., Monticello.

Members Present.

The following members were in attendance:

E. E. Mitchell, Morrilton.
R. P. Allen, Van Buren.
J. M. Pittman, Prescott.
T. B. Stewart, Newport.
W. A. Jackson, Dardanelle.
J. B. Avera, Paragould.
Robert Conn, Stuttgart.
W. O. Hardeman, Little Rock.
Mr. Graham, Clarendon.
C. J. Crane, Batesville.
M. O. Martin, Texarkana.
W. F. Stanley, Levy.
J. L. Davis, Magnolia.
Dan Pittman, Prescott.
W. A. Cook, Little Rock.
R. H. Strong, Ozark.
L. D. Smith, Stephens.
Ernest M. Warren, Little Rock.
H. A. Guild, Little Rock.
J. Van Dokkum, Little Rock.
J. P. Simpson, Malvern.
W. E. Dean, Portland.
W. I. Stout, Little Rock.
D. E. Watson, Hamburg.
H. W. Patrick, Russellville.
A. F. Cook, Little Rock.
W. M. Harrell, Conway.
Hamp Williams, Hot Springs.
J. H. Morgan, Camden.
J. B. Hurley, Warren.
W. G. Barnes, Little Rock.
I. B. Winbumm, Coal Hill.
W. V. Hamilton, Clarksville.
Manly Fox, Clarksville.
J. H. Bolcourt, Little Rock.
R. P. Graham, Fordyce.
C. T. Rosenthal, Batesville.
George Rosenthal, Batesville.
S. E. Cooper, Little Rock.
J. F. Maxey, Ozark.
Albert Benish, Hazen.
W. T. Avera, Pocahontas.
S. R. George, Magazine.
J. W. George, Magazine.
R. D. Jones, Magnolia.
S. M. Beattie, Newport.
W. N. Godbey, Little Rock.
E. D. Bracy, Little Rock.
J. H. Crouch.
G. V. Sneed, St. Louis.
F. D. Barrow, Ozark.
Frank B. Gregg, Little Rock.
H. E. McRae, Arkadelphia.
E. P. Gaines, Lake Village.
R. N. Vevil, Morrilton.
L. A. Morgan, Victoria.
H. P. Alexander, Little Rock.
O. H. Johnson, Little Rock.
G. H. Lyon, Little Rock.
A. S. Sutton, Little Rock.
M. B. McNeeley, Little Rock.
Charles Wingfield, Hope.
W. N. Brandon, Little Rock.
H. D. Lefever, Little Rock.
A. C. Ward, Beebe.
Frank Lyon, Little Rock.

THE WM. HENRY & R. E. BELL HARDWARE COMPANY, Fort Worth, Texas, have had reproduced a bill of Hardware, charged to what was then R. E. Bell & Co., by C. H. Slocomb, New Orleans, La., an importer of Hardware. The invoice bears date of October 4, 1866, and among the items are Band Saw Files, 3 and 4½ inch, at $1.25 and $2.25 per dozen; Pegging Awls, $2 a gross; English Butcher Knives, $3.50 a dozen; Padlocks, $3.25 a dozen; Fast Butts, 4-inch, $2.50 per dozen; 1½-inch No. 13 Screws, $1.10 a gross; Horseshoes, $12 per keg of 100 pounds; Nails, 4 and 10 penny, $8 per keg; Wool Cards, $8 per dozen, and so on, which with packing and drayage, $3.50, totaled $293.68.

THE C. A. PECK HARDWARE COMPANY, Berlin, Wis., are advertising their Rural Mail Boxes and Automatic Trucks by means of illustrated enameled blotters which they send to retail Hardware dealers.

The Excelsior Hardware Company, Excelsior, Minn., have been organized by F. C. Muckey and others, and have purchased and will continue the Hardware business of R. H. De Groot & Co.

IRON CUT NAILS?

THERE has of late been an increase in the demand for Iron as distinct from Cut Nails, and several mills are making a specialty of supplying them. In this connection the following letter, which is from a gentleman long and prominently identified with Nail interests, makes the point that there are now on the market no Iron Cut Nails in the strict sense, as those which are so-called are not made as of old from puddled iron:

The fact is that there are no Iron Nails made in this country to-day; and it is a little amusing to those who are well informed to note that people in the West have been, and perhaps still are, paying 15 cents per keg more for alleged Iron Cut Nails than for Steel Cut Nails.

The so-called Iron Cut Nails of to-day are made by welding up scrap, and it is impossible for any one to continuously buy iron scrap in the market. The introduction of steel has been so general that the scrap heaps consist, for the most part, of steel scrap to-day. These steel scraps are welded up in the furnace and rolled into Plates, which Plates are cut into Nails of inferior quality, for the welding is imperfect and the Nails are afflicted to a greater or less extent with cold shuts, cracks and slivers, while the Nails cut from Plates which are rolled from a solid steel ingot are free of these defects.

In the old days Iron Nails were made of puddled iron, and were really iron; but there are no Cut Nails made at this time from puddled iron.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS *for catalogues, price-lists, quotations, &c., have been received from the following houses:*

FROM WEIR & MCCLAVE, Steubenville, Ohio, who have succeeded Joseph D. Porter and intend conducting the wholesale and retail business in Shelf and Heavy Hardware, Factory and Mine Supplies, Paints, Oils, Glass, Cutlery, &c.

FROM CRONK BROS., who have succeeded Miller & Crary in the general Hardware business at Marshalltown, Iowa.

FROM C. MILLER & CO., who are successors to Cooper & West in the Hardware and Implement business in Sharpsburg, Iowa.

FROM MAIR & BURTON, Minnedosa, Man., who have lately opened up as dealers in Shelf and Heavy Hardware, Stoves, Furnaces, Tinware, Paints, Oils, &c.

FROM WILSON & WEBBLES, Mechanicsville, Iowa, who have succeeded Wilson & Carpenter in the Hardware, Stoves, Sporting Goods and Plumbing and Heating business.

FROM STROEBEL BROS., East Jordan, Mich., who have embarked in the Hardware, Stove, Implement, Paint and Sporting Goods business.

FROM MASON & HALL, Belfast, Maine, who have succeeded L. A. Knowlton & Co. in Hardware, Agricultural Implement, Paints, Sporting Goods, &c.

FROM ESTATE OF WILLIAM H. CLARKE, Southbridge, Mass., who have succeeded William H. Clarke in the Hardware, Stove, Paint, Oil, Glass and Agricultural Tool business.

Whittier Hardware Company, Whittier, Col., have been incorporated with a capital stock of $40,000. They handle Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, Electrical Supplies, also Plumbing, Cornice work, &c. They have recently taken possession of a new $13,000 two-story brick block, 50 x 135 feet.

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TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

A SPRING TRADE PAMPHLET.

As illustrating good methods in circularizing we reproduce the contents of a booklet issued a month or two ago by The J. E. Bassett & Co., New Haven, Conn. The booklet has 12 pages and cover, and bears the title "Signs of Spring." The size of the page is shown in the following reproduction of the first page of the reading matter, which also indicates the manner in which the cuts are inserted, being, however, alternately at the top and bottom of the page:

No. 90.

The long winter is at last gone. The Man with the Organ grinds out his repertoire of blitheful odes to Gentle Spring.

Our friend the Hen is cackling out her joy at having broken the egg trust as she scratches for the Early Worm. Base ball and tops, automobiles and yachts, begin to fill the minds of men according to their bent, while spring gowns divide honors with the servant question in the minds of women. And the cause of it all is—Spring is come.

And the coming of Spring gives us the cue to speak our little piece about the Haberdashery for House and Garden and other Spring Styles at Ye Olde Harde-Ware Store.

The John E. Bassett & Co.

754 Chapel Street.

314 State Street.

The subsequent pages contain the matter given below, the illustrations being arranged in the manner indicated above. By the courtesy of the company we are permitted not only to present these illustrations, which are original with them, but to add them to our list of Advertising Cuts, so that they may be utilized by merchants who may desire to make use of them.*

* Circulars of these Cuts, which are sold separately at 40 cents, and also of other Advertising Cuts in large variety, may be obtained by addressing David Williams Company, 232-238 William street, New York.

No. 91.

The love of the ground seems inherent in the race for most men delight to get next to Nature now and then. One may have his country estate, another bis back yard garden—the idea's the same. No recreation is more healthful and no work can be more natural than that of the man with the hoe.

We sell all kinds of Garden Tools; in fact, everything for the garden. Here, as elsewhere, it's been our endeavor to have the best it's possible to buy. And that doesn't mean that you've got to pay us a lot more than you might have to pay for inferior goods. Moreover, you'll find here what you want.

A thing no sane dealer will experiment with is Garden Hose. Rubber is expensive, its substitutes are many and unscrupulous makers don't hesitate to send out worthless, rotten stuff and stamp it Superfine. We paid a high price for such knowledge years ago.

Now the kinds we have in stock have been handled by us for years—grades we know all about and don't hesitate to recommend as the best for the price your money can buy whether you pay us eight or seventeen cents a foot.

Of course we have all kinds of Sprinklers and other Hose Appliances.

No. 92.

No. 93.

Bum Lawn Mowers will provoke more real sinful cussing than bum automobiles—which is saying a lot—and the reason is that there're more of them. Bargain sale tags on gaudily painted Mowers have been the undoing of many an upright man.

We have sold Lawn Mowers for twenty-five years and know something about them—at least we know the sheep from the goats. We show an assortment of six kinds, with several sizes of each, and there isn't a bad one in the lot, although the prices start as low as $2.98. Grass Catchers, Grass Shears and Hooks, and Lawn Weeders can also be found here.

One might as well plant the label on a tomato can as to plant some of the seeds that are sold around the country. Such seeds are consigned to dealers, taken back at the end of one season, sent out again the next and are about as live as a dried-up mummy. We are selling seeds this year, and those we sell—Woodruff's Seeds—are well liked by the farmers through the State—and farmers have to know that seeds are good.

We make a specialty of the lighter kind of Garden Tools such as women use for flower and kitchen gardens, and other Tools that other stores don't keep.

No. 94.

No. 95.

The sounds of Carpet Beater and Tack Hammer are proclaiming house cleaning time. A few people may find house cleaning pleasant, but to the many it's a pleasure that would gladly be dispensed with. But its burdens may be lightened if one is provided with the articles necessary to the task.

Did you know that we now have the things you need—Brooms and Brushes, Mops and Dusters, Rug Beaters and Carpet Sweepers, Tack Hammers and Tacks, Metal Cleaners and Wood Polish, Floor Wax and Door Mats. And the prices prove as satisfactory as the goods.

We also sell all kinds of laundry needs.

We have been greatly pleased at the support the ladies of New Haven have given us in our endeavor to have an up-to-date department of high grade Kitchen Utensils. It has encouraged us in going into it more extensively than we at first intended, with a result that we have already acquired the reputation of having the largest stock in the State.

Our aim has been to keep the best of everything and to have as well the hundred and one odd things that the modern housekeeper needs to add the finishing touches to a well served dinner.

And we're not afraid of our prices.

No. 96.

No. 97.

The Icebox that effects an interchange of tastes among the various foods, while it melts away the ice like an oven, isn't built right. The Baldwin Dry Air Refrigerator is.

A scientific arrangement of currents and a practical method of air tight construction exclude the heat, save the ice and prevent the blending of tastes. Such a Refrigerator is an economical investment.

Baldwin Refrigerators are made in all shapes and sizes and are spruce, zinc or porcelain lined. They have some exclusive features that can better be shown than described.

After all, home-made ice cream stands for quality, variety and economy. And up-to-date Freezers are doing away with much of the labor required. Our newest Freezer, the Autospin, is spun with a cord in a novel yet practical way. We also sell the Magic and White Mountain, the XXth Century and the Automatic.

For packing cream we have Bricks and Fancy Molds in large and individual sizes and in a large variety of patterns.

We also have a complete line of Ice Picks, Lemon Squeezers and other utensils required for the mixing of summer drinks, as well as Water Coolers and Filters.

No. 98.

No. 99.

Lacking the strenuousness of tennis and not requiring the layout that golf demands, the old game of croquet is again coming to the front as a summer pastime. And croquet is by no means a game suited only to the very young or the very old, for the skill of the putting green is no greater than that required to put up a stiff round at croquet.

We have both the regular and professional styles of Croquet Sets—the best of each grade that can be found. Prices range from $1.25 to $7.50 a set.

Don't forget that we also sell good hammocks.

The vanguard of the fly army has already arrived and the need of Screens is becoming urgent. We do not make Screens, but we sell all the material required and have the best adjustable Screens we have been able to buy. These come in different sizes for large and small windows. Then we have two styles of doors each in five sizes and both made with special reference to appearances. The best one is very strongly built and has a made-to-order look. We also sell the necessary Spring Hinges, Door Springs, Checks and Latches.

Did you know we were also headquarters for Baskets?

No. 100.

No. 101.

Starting in a small way a few years ago and branching out with special reference to local needs and fancies, we have acquired a stock of Fishing Tackle second to none in New England. In buying both salt and fresh water Tackle we have made ourselves independent of any one maker and have gone far beyond the usual trade centers to secure the finest goods and the lowest prices. We are therefore enabled to meet other prices with better goods, or to undersell on equal quality.

Sportsmen will find much of interest here, since we sell Ammunition, Revolvers, Knives, Hatchets and many other camp necessities.

BRIDGEPORT VISIT OF THE PHILIPPINE COMMISSION

THE Honorary Board of Filipino Commissioners to the Louisiana Purchase Exposition, composed of 42 members, will visit Bridgeport, Conn., on the 18th and 19th inst. for the purpose of inspecting the manufacturing interests of that city. The party will be in charge of Hon. A. W. Fergusson, Executive Secretary of the Philippine Islands. On their arrival during the forenoon of the 18th they will be met at the station by a committee of manufacturers and taken in automobiles to a number of the principal factories, where they will be shown the methods of manufacture. In connection with the visit of the commission there will be an exhibit of the various articles manufactured in Bridgeport. This exhibit will be held in the hall of the Public Library building, which is approximately 50 x 170 feet. Applications for space which have already been received indicate that a representative exhibit will be made. It is claimed that Bridgeport can boast of a greater variety of manufactured goods than any city of its size in the United States. After

the inspection of exhibits a banquet will be served at the Atlantic Hotel under the auspices of the Bridgeport Board of Trade. Governor Chamberlain will be one of the guests. On the 19th the commission will be taken in automobiles to the parks and various points of interest in the city. They will be entertained at noon at the Bridgeport Yacht Club, where a fish dinner will be served, after which the commission will return to New York City.

THE TREATMENT OF TRAVELING SALESMEN.

THE treatment of traveling salesmen is one of the topics which often comes up at trade conventions. Those who are in the habit of calling upon merchants as the representatives of manufacturers and jobbers experience a wide diversity of treatment, ranging from an abrupt and perhaps discourteous reception to one that is considerate and cordial. At the recent Atlanta conven-

FRANK GUILDENER.

tions one of the addresses was by Frank Guildener, who spoke on this subject from an extended experience throughout the South as the representative of Sargent & Co. He presented in an informal and facetious manner some suggestions in regard to the treatment buyers should accord to traveling men and illustrated his remarks by some incidents from his own experience. He made the point that the traveling salesman should be treated kindly and courteously, and referred in general to the advantage there is to the merchant, as in such case the salesman will do anything in his power to favor him in the matter of prices and otherwise. From this address we make the following extracts, from which it will be seen that notwithstanding the light vein in which the matter is presented some practical suggestions are made, the force of which will be appreciated by the Knights of the Grip, who fill admirably the important and withal difficult place they occupy:

Having traveled around this country for the past 30 years and meeting all kinds of buyers, would say treat the traveling man kindly and always have a welcome hand for him. Many times, he being hundreds of miles from home, wife and children, providing the necessities of life, downhearted and low spirited, he walks into a large Hardware house to see the buyer. The buyer often treats him as if he was a stranger, too busy to talk to him. Now, suppose this salesman represented a large Axe manufacturer, who had plenty of Axes on hand and could deliver them at once without any delay, and his price was just $1 per dozen less than the big Axe trust, Parks Association. Why, you would treat him with all the courtesy you know how; some of you would offer him a Robert Burns cigar, some of you would take him to lunch with you, and a few of you, only a few, would say, "Let's walk down the street and take a smile together." Therefore treat the traveling men kindly and all alike, it does not matter whom he represents.

Then, again, he walks into a very large Hardware house in the South. The first thing that meets his eyes is a large card on the door. This card reads, "Traveling Men's Reception Room." Oh, how his heart flutters—I mean the new traveling man, not the old ones. He imagines, when he stands there reading this sign, that he is to see inside a large round table, with five chairs all around it and a box of cigars in the middle. When he enters he is disappointed. He sees another sign: "We object to the use of Tobacco in this office in any form." Then he has to sit down in this reception room and wait for hours for the buyer, and has often fallen asleep. When he awakens he says, "Oh, my; won't I make that buyer pay for this if he buys anything from me."

So I say get close to the traveling man, and if he has a 10 per cent. up one sleeve or a 5 per cent. up the other sleeve, or even a 2½ up his bootleg, I am sure that he will be glad to give it to you.

Again, do not keep him waiting in your stores if you do not want anything in his line. You yourselves have traveling men on the road, and no doubt you have found fault with them because they took so long to make the trip, and yet this salesman was held back by some slow buyers.

I can look around this room and see merchants—yes, Hardware merchants—who are rated up near the millions—at least that is what the big books tell us, Bradstreet and Dun. And I suppose you all pay Bradstreet and Dun to tell the truth. Who has assisted you in making this large amount of money and got you this rating? Your traveling men. This you all know, and have to admit you never made it retailing goods.

It seems to me I never take a trip South but that some buyer will say, after calling on him in the morning and going back in the afternoon, that he has not had time to look up the order, when are you going out of town, &c. Now, wake up, you old, slow buyers. Take my advice and hire yourselves to Bruce Keener, Oscar Barker or Frank Gray, and after you have been with them one week and see how they give the traveling men attention, you will return home and never again say "I am too busy to look up an order." For people of this class do more work in one week than you slow buyers will do in a month.

Again, do not write sarcastic letters to your traveling men. You lose more by doing this than you lose on your failures to write them encouraging letters. A kind letter to a traveling man makes him feel as if he could sell the devil a Four-Prong Dull Fork when his order calls for a six-prong sharp one. Have your traveling men on the road so contented that they will say, as I do, it is a holiday for me to work for my firm.

AMONG THE HARDWARE TRADE.

Corylel & McConnell, Pulteney, N. Y., on June 1 succeeded to the Hardware business of E. W. Cook.

William Coumerith is successor to Buchanan & Co. in the Hardware, Stove and Paint business in Mullan, Idaho.

Oscar Hinshaw has lately purchased the Hardware business of J. Carmichael & Co.

F. M. Clark has succeeded I. Aby & Co. in the Hardware line at McComb, O. T.

J. E. McGuire has disposed of his Hardware and Paint business in Rock Rapids, Iowa, to S. A. Feay, who continues at the old stand.

The X-Radium Foot Warmer

Novelty Mfg. Company, Jackson, Mich., are offering the foot warmer shown in Fig. 1. It consists of two parts, the heating pad of stamped steel, shown in Fig. 2,

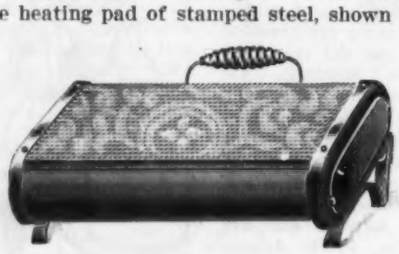


Fig. 1.—The X-Radium Foot Warmer.

filled with X-radium, a substance which is described as having the same affinity for heat as a sponge has for wa-

ter. The second part, Fig. 3, is a stamped steel receiver, covered with plush, in which the heating pad is placed, and which serves as a foot rest. The whole is nickel plated and polished, 10 inches long, 6½ inches wide and 4

Fig. 2.—Heating Pad.

inches high. To prepare for use the pad is placed upon the top of a hot stove for 20 minutes, then put in the foot rest, after which it will remain hot for two to three hours. The point is made that the warmer does away with the necessity of burning carbons, briquettes, charcoal, gasoline, kerosene, &c., and that there is no smoke, odor or

Fig. 3.—Foot Rest.

danger of burning robes or shoes. The warmer is recommended by the manufacturers for use by physicians, chaffeurs, shoppers, rural mail carriers and drivers of hacks, carriages, milk, grocery and delivery wagons, sleighs, &c.

Rea's Improved Self Piercing Bull Ring.

The accompanying cuts represent an improved bull ring, put on the market by E. K. Rea, 920 Park avenue, Kansas City, Mo. The novelty of the ring is that the outer point of the ring is used for cutting through the car-

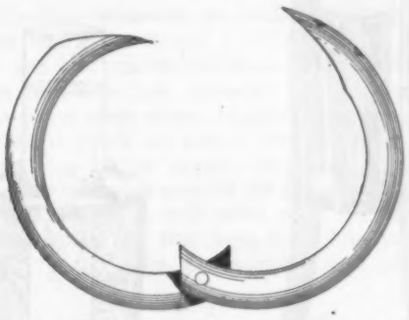


Fig. 1.—Rea's Improved Self Piercing Bull Ring.

tilage of the animal's nose, avoiding the necessity of performing the painful operation separately with a sharp instrument and then inflicting pain a second time when inserting the ring. In Fig. 2 the points at the break of

Fig. 2.—Ring After Inserting.

Fig. 3.—Manner in Which Ends Are Fastened.

the circle are shown, brought together after the ring has been inserted, making an unbroken ring. In Fig. 3 the ring is broken away, showing the screws and the direction which they take.

The Sunshine Alumynoid Washer.

The Quincy Washing Machine Company, Quincy, Ill., are manufacturing the washing machine shown herewith. Fig. 1 shows the white porcelain enameled iron dasher, white enameled cover and detached fly wheel, faucet for draining off the water and gasoline burner, while Fig. 2 represents the machine ready for use. The body of the washer is made of Alumynoid, a metal which the company have prepared, combining mixed portions of aluminum, tin and spelter. This metal is not coated or plated. The bottom is stamped of one piece of Alumynoid metal; it is higher in the center and has rounded edge, and is provided with a drain channel, to which a

Fig. 1.—Sunshine Alumynoid Washer.

faucet with ⅞-inch opening is attached for drawing off the water. The dasher or pin wheel is made of one piece of iron and triple coated with white porcelain enamel. The gasoline burner, which is detachable, is stated to be of sufficient capacity to heat 20 gallons of cold water to the boiling point in 20 minutes. It is also made in a form for burning manufactured or natural gas. The company name as special features of their machine the following:

Fig. 2.—Sunshine Washer Ready for Use.

Greater inside capacity than wooden machines, because the machine is made of metal, saving the space taken up by the thickness of the sides of the wooden washers; the balance wheel is fitted to the body of the machine, and does not have to be lifted when raising the cover; all the gearing is inclosed, eliminating the danger of injury to the operator; a faucet for draining the machine instead of using wooden plugs, and ability to boil the clothes in the machine while it is being operated.

Tiger All Steel Wagon Jack.

The accompanying illustration is of a wagon jack, operated by pinion and lever in a way to give the greatest possible leverage. When the load is lifted and the handle is down below horizontal the jack becomes automatically locked, and holds the load in position until the lever is

Tiger All Steel Wagon Jack.

raised. Though the jack itself weighs only about 11 pounds, it has a capacity for lifting 1200 pounds a distance of 1½ inches, which is sufficient for the purposes of the ordinary wagon repair shop. In operation, the jack is placed under the load to be lifted and the bracket is adjusted by hand to the notch nearest the point of contact. The jack is manufactured by the Richards Mfg. Company, Aurora, Ill.

Easy Dough Mixer.

The R. W. Jamieson Company, 50 Warren street, New York, are manufacturing the Easy dough mixer, here illustrated. This mixer is simple in construction, easily clamped to table or shelf, and can be used in connection

Easy Dough Mixer.

with any of the various sizes of pans used for raising a batch of bread. It is also suitable for mixing cake dough or any similar mass. The angular arm support has a clamp at one end and a vertical adjustable bearing at the other. The mixing rod, which is bent U shape, is adjustable both vertically and laterally, so as to be usable in a bread raising pan of any diameter or depth. Provision is made at the side of the supporting arm for engaging the handle of pan, preventing the latter from turning as the crank is rotated. The mixer is of one piece of metal, easy to adjust and quickly removable for cleansing, the rod being tinned and the remainder galvanized. Given the necessary ingredients—*i. e.*, liquids, yeast and flour—without touching hands to the mass, the compound, it is said, can be thoroughly and evenly mixed in three minutes' turning of the crank. The mixer in rotating picks up the dough, which, being soft, tends to lag and travel slower than the mixing member, which draws through it, kneading it with an even grain and molding into a compact mass. After mixing, the apparatus can be lifted out and the dough allowed to rise in the mixing pan. The advantage of such a device, aside from important sanitary features and freedom from contact with hands, is the rapidity with which the leavening properties are easily and evenly distributed throughout the entire mass. After the batch has risen the mixer can be again used for kneading the dough before separating it into loaves for baking.

XXth Century Bottle Cooler.

Cordley & Hayes, 172 Duane street, New York, sole agents for Fibrotta indurated fiber ware, have just put on the market the XXth Century bottle cooler, here

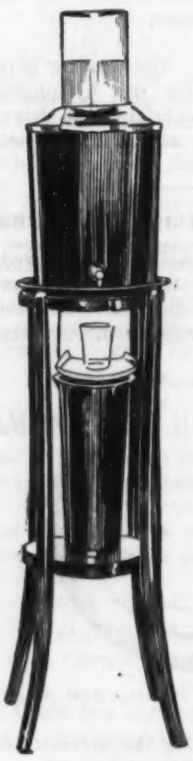


Fig. 1.—XXth Century Bottle Cooler and Stand.

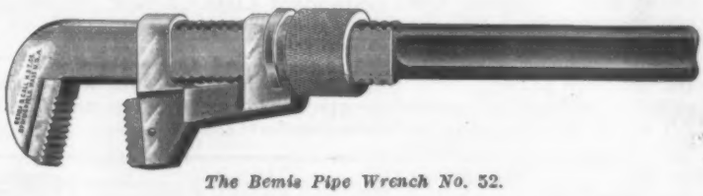
Fig. 2.—Sectional View of Cooler.

shown. It is made in two sizes, suitable for cooling almost any kind of liquid beverage, such as water, milk, tea, coffee, grape juice, &c. It consists of a fiber ware container, with insde glass reservoir securely stayed, bright nickel top, new self closing push faucet, and is made in plain, decorated, lettered or mahogany finishes. The No. 1 size will accommodate almost any 2, 3 or 4 quart bottle. The larger one, No. 5 size, will receive a 5-gallon demijohn, this one having a hinged door at back through which to conveniently introduce broken ice, which cools the liquid in the glass reservoir connected with the drawing faucet without being in direct contact with the ice, the water from above only partially filling the inner glass receptacle, which is open at the top. This size has a second and separate faucet at the back for drawing off the melted ice water. As water is drawn at the faucet only a certain amount flows from the supply above, and is cooled to spring temperature in the lower receptacle, the fiber container being an excellent nonconductor of heat and cold, thus economizing ice.

Stands are furnished, made of wood in similar finishes, to fit either cooler, as in Fig. 1, if desired, or coolers can be purchased separately, there being an indurated fiber jar below to receive any surplus water not partaken of by the individual.

The Bemis Pipe Wrench No. 52.

Bemis & Call Hardware & Tool Company, Springfield, Mass., are putting on the market the wrench herewith shown. The wrench consists of a one piece forged steel

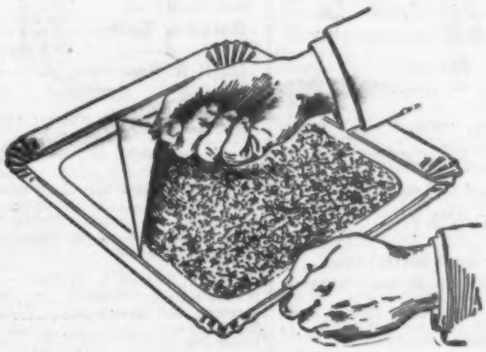


The Bemis Pipe Wrench No. 52.

bar, slide with serrated steel jaw secured by a pin and operating nut. In the construction of the wrench strength and durability have received first consideration. The manufacturers call special attention to the exceptional strength at the angle of the upper jaw. As a result of the jaws being offset from the bar the wrench can be applied and operated on a pipe located against a wall or in other confined places. Among points of excellence the following are enumerated: That the wrench will not crush, slip or lock on pipe; that it is built for hard usage and from the best of materials; that all parts are interchangeable, so when worn out or broken may be replaced. The wrench is made in five sizes, 8 to 24 inch, inclusive, adjustable to pipe from ⅛ to 2½ inches in diameter. The 8 and 10 inch wrenches are made with wooden handles; the 14, 18 and 24 inch wrenches have steel handles, as shown in the illustration.

Nickel Plate Fly Paper.

We illustrate herewith the Nickel Plate fly paper, a new kind which the Nickel Plate Fly Paper Company, Chicago, are now placing on the market. Its price and the form in which it is prepared are suggested in the name. A paper plate, about 11½ inches from rim to rim, is provided, in which are placed, one on top of the other, five sheets, 8¼ inches square, of sticky fly paper, the bottom sheet being fastened to the plate and the remaining sheets gummed on both sides, with the exception of the top, which is left free from the sticky preparation. With this "plate" idea the company seek to eliminate



Nickel Plate Fly Paper.

the uncleanliness and inconvenience often attendent upon the use of the ordinary sheet form of fly paper, which unless is be weighted down may be easily overturned by wind or otherwise, its flat surface permitting the smearing of whatever object it may come in contact with. The rim of the plate acts as a shield, intercepting the touching of the paper with anything upon which it has fallen. The sticky material is hardened around the edges of each sheet, preventing its oozing off when the sheet is in any other than a flat position. This form of paper is also convenient, inasmuch as it is only necessary when one sheet is covered with flies to remove it, leaving the one immediately under it ready for use, and so on until all five sheets are used.

The Star Nail Puller.

The Winkley Company, Hartford, Conn., are putting on the market a new nail puller, shown in Fig. 1, which also combines other uses. As a puller, the cylindrical nose is driven underneath the head of the nail, which is caught in the slotted lower surface and easily pried off. The end of the handle serves as a tack puller, and also as a box opener. In the handle are openings conforming in shape and size to square and hexagon standard bolts

Fig. 1.—The Star Nail Puller.

and nuts, thus making a wrench of the puller. The head may be used as a hammer. The tool is of wrought iron,

Fig. 2.—The Nose Driven Underneath the Nail Head.

Fig. 3.—Taking Out the Nail.

with hardened steel puller nose. The purpose is to supply a handy tool for stores, packing and shipping rooms, the home, the farm, &c.

Sterling Emery Wheel Dresser.

The emery wheel dresser herewith illustrated has cutters made of high carbon tool steel, tempered so as to prove not only more durable and serviceable, but more economical, than case hardened cutters. The handle is made of stamped steel, strong and light, there being no dead weight to tire the workman. The cutters revolve on

Sterling Emery Wheel Dresser.

an axle pin of hardened tool steel. The cutters are put up in sets of four, with two washers, each set being neatly boxed in a small carton, 100 of these cartons packed in a box, and are offered by the Diamond Saw & Stamping Works, Buffalo, N. Y.

Current Hardware Prices.

REVISED JUNE 14, 1904

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Abrasives—

Adamite in Carloads:
Crystal ..... ℔ ton $90@100
Grain ..... ℔ ton $120@140
See also *Emery*.

Adjusters, Blind—

Domestic, ℔ doz. $3.00 ..... 33⅓%
North's 10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent 35%
Tapiin's Perfection 5%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Armand Hammer, Wrought ℔ ℔ 8½@8¾¢
Eagle Anvils ..... ℔ ℔ 7¼@7¾¢
Hay-Budden, Wrought ..... 9@9¼¢
Horseshoe brand, Wrought ..... 9@9¼¢
Trenton ..... ℔ ℔ 9@9¼¢

Imported—

Peter Wright & Sons ..... ℔ ℔ 10½¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00 ..... 15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co ..... 30&5%
Livingston Nail Co 33⅓%

Augers and Bits—

Com. Double Spur ..... 75@75&5%
Boring Machine Augers ..... 66⅔@70%
Car Bits, 12-in. twist ..... 60@60&10%
Jennings' Pattern ..... 50&10&5@60%
Ford's Auger and Car Bits ..... 40&5%
Forstner Pat. Auger Bits 25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list 25&10%
No. 30, R. Jennings' List. 40&7½&10%
Russell Jennings' ..... 25&10&2½%
L'Hommedieu Car Bits ..... 15&10%
Mayhew's Countersink Bits 45%
Millers' Falls ..... 50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car bits ..... 40&10%
Pugh's Black 20%
Pugh's Jennings' Pattern 35%
Snell's Auger Bits 60%
Snell's Bell Hangers' Bits ..... 50&10%
Snell's Car Bits, 12-in. twist 60%
Wright's Jennings Bits (R. Jennings' list) 50%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's small, $1.5; large, $2.6 ..... 50&10%
Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18 ..... 50&10%
Ford's, Clark's Pattern ..... 50&10@60%
C. E. Jennings & Co., Steer's Pat. .25&10%
Swan's 60%

Gimlet Bits—

Common Double Cut..gro. $3.00@3.25
German Pattern ..... gro. $4.50@4.75

Hollow Augers—

Bonney Pattern, per doz. $10.00@11.00
Ames ..... 35&10%
New Patent ..... 25&10%
Universal 20%
Wood's Universal 25%

Ship Augers and Bits—

Ford's 40%
C. E. Jennings & Co.:
L'Hommedieu's ..... 15&10%
Warrous' ..... 33⅓&10%
Ohio Tool Co.'s 40%
Snell's 40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled ..... gro. $2.75@3.00
Unhandled, Shouldered. gro. 63@66c
Unhandled, Patent ..... gro. 66@70c
Peg Awls:
Unhandled, Patent ..... gro. 31@34c
Unhandled, Shouldered. gro. 65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality ..... $5.50@6.00
Second Quality ..... $4.75@5.25

Axle Grease—See *Grease, Axle*

Axles— *Iron or Steel*

Concord, Loose Collar ..... 5@5½¢
Concord, Solid Collar ..... 5@5½¢
No. 1 Common ..... 4@4½¢
No. 1½ Com. New Style ..... 4½@5¢
No. 2 Solid Collar ..... 4¼@5¼¢
Nos. 7, 8, 11 and 12 ..... 60¢5@80¢10%
Nos. 13 to 14 ..... 60@5@60¢10%
Nos. 15 to 18 ..... 60¢10@70%
Nos. 19 to 22 ..... 60¢10@70%

Boxes, Axle—

Common and Concord, not turned.. lb. 4½@4½¢
Common and Concord, turned ..... lb. 5@5½¢
Half Patent ..... lb. 9@9½¢

Bait— Fishing—

Heuuryx:
A Bait 20%
B Bait 25%
Competitor Bait ..... 20&5%

Balances— Sash—

Caldwell new list 50%
Pullman's 60%

Spring—

Spring Balances ..... 60@60&5%
Chatillon's:
Light Spg. Balances ..... 40&10%
Straight Balances 40%
Circular Balances 50%
Large Dial 30%
Peiouze 50%

Barb Wire—See *Wire, Barb.*

Bars— Crow—

Steel Crowbars, 10 to 40 lb., per lb.. 3@3½¢

Towel—

No. 10 Ideal, Nickel Plate ..... ℔ gro, $8.50

Beams, Scale—

Scale Beams, List Jan. 12, '82.40¢10%
Chattillon's No. 1 ..... 30%
Chattillon's No. 2 ..... 40%

Beaters— Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.30
No. 10 Wire Galvanized ..... ℔ doz. $1.75
Western W. G. Co.
No. 1 Electric ..... ℔ gro. $7.80
No. 2 Buffalo ..... ℔ gro. $9.00
No. 3 Perfection Dust ..... ℔ gro. $8.00

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned ..... ℔ doz. $1.20
Holt, No 1, Tinned ..... ℔ doz. $1.50
Holt, No. B, Japanned ..... ℔ doz. $2.00
Holt, No. 2, Tinned ..... ℔ doz. $2.25
Lyon, No 2, Japanned ..... ℔ doz. $1.25
Lyon, No. 3, Japanned ..... ℔ doz. $1.50
Lightning Chain, ℔ gro $15.00
National Mfg. Co.: ℔ gro.
No. 1 Dover, Family size $7.00
No. 2 Dover, Hotel size 14.00
Tapiin Mfg. Co.: ℔ gro.
No. 60 Improved Dover $6.00
No. 75 Improved Dover 8.50
No. 100 Improved Dover 7.00
No. 102 Improved Dover, Tin'd 8.50
No. 150 Improved Dover, Hotel 15.00
No. 152 Imp'd Dover, Hotel, T'd 17.00
No. 200 Imp'd Dover Tumbler 8.50
No. 202 Imp'd Dover Tumbler, Tin'd 9.50
No. 300, Imp'd Dover Mammoth, ℔ doz $25.00
Western, W. G. Co., Buffalo $7.00
Wonder (S. S. & Co.) ..... ℔ gro. net, $6.00

Bellows—

Blacksmith, Standard List. 75@75&5%

Blacksmiths'—

Inch..	*30*	*32*	*34*	*36*	*38*	*40*
Eac h	*$3.50*	*3.75*	*4.25*	*4.80*	*5.35*	*6.15*

Extra Length:
Each $4.00 4.55 5.10 5.60 6.10 7.50

Molders—

Inch	*10*	*12*	*14*
Doz	*$8.50*	*10.00*	*13.00*

Hand—

Inch	*6*	*7*	*8*	*9*	*10*
Doz	*$4.25*	*4.50*	*5.00*	*6.50*	*7.75*

Net Prices.

Bells— Cow—

Ordinary goods ..... 75&5@75&10%
High grade ..... 70¢10@70¢10¢5%
Jersey ..... 75&10%
Texas Star 50%

Door—

Abbe' Stong 45%
Barton Gong 55%
Home, R. & E. Mfg. Co.'s ..... 55&10%
Lever and Pull, Sargent s ..... 60&10&10%
Yankee Gong 35%

Hand—

Hand Bells, Polished, Brass ..... 60¢ @60¢10%
White Metal 60%
Nickel Plated ..... 50@50¢5%
Swiss ..... 60@60¢7½%
Cone's Globe Hand Bells ..... 33⅓@33⅓&10%
Silver Chime ..... 33⅓@33⅓&10%

Miscellaneous—

Farm Bells ..... lb. 2¼@2½
Steel Alloy Church and School ..... 50¢10@60¢5%
American Tube & Stamp'g Co. Gongs . 75%
Table Call Bells ..... 50@50&10%
Trip Gong Bells ..... 55&10@60%

Belting— Rubber—

Agricultural (Low Grade)..75@75¢5%
Common Standard ..... 70@70&10%
Standard ..... 65@70%
Extra ..... 60¢5@60¢10%
High Grade ..... 50¢5@50¢10%

Leather—

Extra Heavy, Short Lap ..... 60@60¢5%
Regular Short Lap 60¢10@60¢10¢10%
Standard ..... 70@70¢5%
Light Standard ..... 70¢10%
Cut Leather Lacing ..... 60¢10%
Leather Lacing Sides, per sq. ft..18c

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender 40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.5: No. 5, $30.50.

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—

Common Wooden ..... 70¢10@75¢5%
Hollow Steel Blocks, with Ford's Patent Sheaves ..... 50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron ..... 50&10%
Stowell's Self Loading 60%
See also *Machines, Hoisting.*

Boards, Stove—

Zinc, Crystal, &c ..... 30¢10@40¢5%

Bolts—

Carriage, Machine, &c.—

Common Carriage ..... 75@ ....%
Phila. Eagle, $3.00 list May 24, '99 .... 80¢10%
Bolt Ends, list Feb. 14, '95 ..... 75@ ....%
Machine ..... 75@75¢5%
Machine with C. & T. Nuts ..... 70¢5@ ....%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch	*3*	*4*	*5*	*6*	*8*
Per doz	*$0.26*	*.30*	*.39*	*.47*	*.65*

Cast Iron Spring Foot:

Inch	*6*	*8*	*10*
Per doz	*$1.00*	*1.35*	*1.75*

Cast Iron Chain, Flat, Japanned:

Inch	*6*	*8*	*10*
Per doz	*$0.75*	*1.05*	*1.30*

Cast Iron Shutter, Brass Knobs:

Inch	*6*	*8*	*10*
Per doz	*$0.87*	*.90*	*1.00*

Wrt Barrel, Jap'd. 75¢10@75&10¢10%
Wrought " Bronzed. 50¢5@50¢10%
Wrought Flush, B. K. 50¢10@60¢10%
Wrought Shutter ..40¢10¢10@60¢5%
Wrought Square Neck ..... 50@50¢10%
Wrought Sunk, Flush ..... 50@50¢10%
Ives' Patent Door 60%

Stove and Plow—

Plow ..... 65¢10@ ....%
Stove ..... 80¢5@80¢10¢5%

Tire—

Common ..... 72½¢10@72½¢10¢5%
Norway Iron ..... 80@80¢10%
American Screw Company:
Norway Phila., list Oct. 16, '84 ..... 80%
Eagle Phila. list Oct. 16, '84 ..... 82½%
Bay State, list Dec. 28, '99 ..... 72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84 ..... 80%
Eagle Phila., list Oct. 16, '84 ..... 83⅓%
Eclipse, list Dec. 28, '99 ..... 72½%
Russell, Burdsall & Ward Bolt & Nut Co.
Empire, list Dec. 28, '99 ..... 72½%
Norway Phila., list Oct. '84 ..... 80%
Upson Nut Co.:
Tire Bolts 72½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch	*1¼*	*1½*	*1¾*	*2*
Per doz	*$4.30*	*5.00*	*5.75*	*7.25*
Inch			*2¼*	*2½*
Per Doz			*$8.65*	*11.50*

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each 25%

Boxes, Mitre—

C. E. Jennings & Co ..... 25&10%
Langdon ..... 15&10%
Perfection ..... ℔ doz, $36 00
Schatz 40%

Braces—

Common Ball, American ..$1.15@1.25
Barber's ..... 50&10&10@60&10%
Fray's Genuine Spofford's 60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 ..... 60%
C. E. Jennings & Co ..... 50&5&10%
Mayhew's Ratchet 60%
Mayhew's Quick Action Hay Patent.. 50%
Millers Falls Drill Braces ..... 25&10%
P., S. & W. Co. Peck's Patent 60&10¢65%

Brackets—

Wrought Steel ..... 80@ ....%
Bradley's Wire Shelf:
Full cases ..... 80&10&10%
Broken cases ..... 80&10%
Griffin's Pressed Steel 80%
Griffin's Folding Brackets ..... 70&10%
Stowell's Cast Shelf 75%
Stowell's Sink 50%
Western, W. G. Co., Wire ..... 60&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Western, W. G. Co 80%
Wire Goods Co ..... 75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier ..... ℔ gro, $36.00

Bull Rings—See *Rings, Bull.*

Butts— Brass—

Wrought list Sept., '96 ..... 20@30%
Cast Brass, Tiebout's 50%

Cast Iron—

Fast Joint, Broad ..... 50@50&10%
Fast Joint, Narrow ..... 50@50&10%
Loose Joint ..... 10¢5@70&10%
Loose Pin ..... 70¢5@70&10%
Mayer's Hinges ..... 70&5@70&10%
Parliament Butts ..... 70¢5@70¢10¢

Wrought Steel—

Table and Back Flaps 75%
Narrow and Broad 75%
Inside Blind ..... 75&10%
Loose Pin 75%
Loose Pin, Ball and Steeple Tip 80¢20%
Japanned, Ball Tip Butts. 70¢10%
Bronzed Wrt, Nar. and Inside Blind Butts ..... 65¢10%

Extra 10@10¢10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series 5%
1200 series 33⅓%
200, 300, 600 and 900 series ..... 40&10%
Hendryx Bronze:
700, 800 series ..... 40&10%
Hendryx Enameled ..... 40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong ..... per lb. 4@4½¢
Sharp, 1 prong ..... per lb. 4½@4¾¢
Perkins' Blunt Toe ..... cents, ℔ ℔ .35
Perkins' Sharp Toe ..... cents, ℔ ℔ .415

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 50	2.00	2.25	each.
Iowa Pattern.	....	2.35	2.50	each.
	20	30	40	qts.
New York Patt'rn	1.65	2.40	2.75	each.
Baltimore Patt'rn	....	1.80	2.00	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.	
$48.00	64.20	129.60	gro., net

Caps—Percussion—

Eley's E. B......60c
G. D......*per M 35@35c*
F. I......*per M 40@45c*
G. E......*per M 50@52c*
Musket.....*per M 62@63c*

Primers—

Berdan Primers, $3.00 per M...20&5%
B. L Caps (Sturtevant Shells) $3.00 per M.....20%
All other primers per M. $1.52@$1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10c&5%
38 C. F., $7 00.....10c&5%
22 cal. Rim, $1 50.....10c&5%
32 cal. Rim. $2.75.....10&5%
B. B. Caps, Con. Ball Swgd.....*$1 90*
B. B. Caps, Round Ball.....*$1.40*
Central Fire.....25%
Target and Sporting Rifle.....15c&5%
Primed Shells and Bullets.....15c&10%
Rim Fire Sporting.....50%
Rim Fire, Military.....15&5%

Cases, Show—

Sun, No. 102. Silent Salesman, 6 ft., $25.00

Casters—

Bed.....70@70c&10%
Plate.....60c&5@60c&10%
Philadelphia.....75@75c&5%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....75&5%
Martin's Patent (Phœnix).....45%
Smith & Hemenway Co.....33⅓&5%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....45%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Coil—

American Coil, Jobbers' Shipments:

3-16	¼	5-16	⅜	7-16	½	9-16
8.00	5.30	4.15	3.75	3.60	3.50	3.45
⅝	¾	⅞	1 to 1¼ inch.			
3.30	3.25	3.50	3.15	per 100 lb.		

German Coil.....60c&10c&10%

Halters and Ties—

Halter Chains.....60c&10@60c&10c&10%
German Pattern Halter Chains, list July 24, '97.....60c&10c&10@....%
Cow Ties.....60@60c&10%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring...$23.50
6½—6-2, Straight, with ring...$24.50
6½—8-2, Straight, with ring...$28.00
6½—10-2, Straight, with ring...$32.00
Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than Straight Link.
Trace, Wagon and Fancy Chains...60&5@60c&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60c&10@60c&10c&5%
Brass.....60c&10@60c&10c&10%
Safety Chain.....75@75&10c&5%
Gal. Pump Chain.....lb 4¼@4¾c
Covert Mfg. Co.
Breast.....40&2%
Halter.....40&2%
Heel.....40&2%
Rein.....40&2%
Stallion.....40&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter.....45@50&5%
Niagara Coil and Halter.....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Niagara Wire Dog Chains...45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl-Jointed Chain.....50%

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 40c
Carpenters', Red.....gro. 35c
Carpenters', White.....gro. 30c
See also Crayons.

Checks, Door—

Bardsley's.....45%
Columbia.....50&10%
Eclipse.....60&10%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemens' Chests, with Tools.....30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Tip 3 Fitters' Chests, Empty.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—

Socket Framing and Firmer

Standard List.....70@70c&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60&10%
C. E. Jennings & Co. Socket Framing No. 15.....60&10%
Ohio Tool Co.'s.....70%
Swan's.....70%
L. & I. J. White.....30@30&5%

Tanged—

Tanged Firmers.....40c&5@40c&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181.....16⅔&10%
L. & I. J. White, Tanged.....25&2%

Cold—

Cold Chisels, good quality.lb. 13@15c
Cold Chisels, fair quality...lb. 11@12c
Cold Chisels, ordinary.....lb. 9 @10c

Chucks—

Beach Pat., each $8.00.....35&5%
Pratt's Positive Drive.....25%
Empire.....25%
Blacksmiths'.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....40%
Drill Chucks, Skinner Patent, 0, 1, 2, 7, 8.....40%
Drill Chucks, Skinner Patent, 3, 4, 5, 6, 7, 8.....30%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron Face Plate Jaws..40%
Independent Steel Face Plate Jaws..40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....45%
Little Giant Double Grip Drill.....45%
Little Giant Drill, Improved.....45%
Oneida Drill.....45%
Scroll Combination Lathe.....45%

Clamps—

Adjustable, Hammers'.....30@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co.....50%
Carriage Makers' Sargent's.....60%
Besly, Parallel.....33⅓&10%
Linemans' Utica Drop Forge & Tool Co40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....40%

Sidewalk—

Star Socket, All Steel.....₱ doz. $4.05 net
Star Shank, All Steel.....₱ doz. $3.24 net
W. & C. Shank, All steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓&10%
L. & I. J. White.....30%

Clippers—

Chicago Flexible Shaft Company:
'98 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....$10.75 }
20th Century Horse, each, $5.00.....20%
Lightning Belt.....$15.00 }
Chicago Belt.....$20.00 } 15%
Stewart's Patent Sheep.....$18.50 }

Finger Nail Clippers—

Smith & Hemenway Co.....doz. net $2.00

Clips, Axle—

Eagle 5-16 and ⅜ inch....75@75&10%
Norway, 5-16 and ⅜ inch...60c&10@70%

Cloth and Netting, Wire —See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.
70c&10@75%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Brass, Walter B. Stevens & Son's list.40%
Embossed, Gilt, Walter B. Stevens & Son's list.....30&10%
Leather, Walter B. Stevens & Son's list40%

Combs, Curry—

Metal Stamping Co.....20&10%

Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.

Ordinary Goods.....75c&5@75c&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%

Compressors, Corn Shock—

J. B. Hughes' ₱ doz.....$2.50

Conductor Pipe, Galva —

L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
A. Eastern.	75c&7½%	75c&2½%
B. Eestern.	75c&10&2½%	75c&7½%
Central.	75c&7½%	75%
Southern	70c&10%	70c&5%
S. Western.	70c&7½%	70c&3½%

Terms, 60 days, 2% cash, 10 days. Factory shipments generally delivered.
See also *Eave Troughs.*

Coolers, Water—

Gal. each.	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	2.70
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	2.40	$3.00	
Gal.	2	3	4	6	8
Galv. Lined Ea.	$1.35	$2.00	$2.2	$2.90	$3.90

25%

Ga.v. Lined side handles

Gal.	2	3	4	6	8
Each.	$1.95	$2.15	$2.40	$3.30	$4.15..25%

Coopers' Tools—

See *Tools, Coopers'.*

Cord—Sash—

Braided, Drab.....lb. 35c
Braided, White, Com.....lb. 33@35c
Cable Laid Italian...lb. A, 18c; B, 16c
Common India.....lb. 10@10½c
Cotton Sash Cord, Twisted....20@28c
Patent Russia.....lb. ..@15c
Cable Laid Russia.....lb. ..@15c
India Hemp, Braided.....lb. ..@18c
India Hemp, Twisted.....lb. 12@13c
Patent India, Twisted.....lb.12@13c

Anniston Cordage Co.: Braided Cotton.
Old Glory, Nos. 7 to 12.....₱ lb 30 ¢
Anniston, Nos. 7 to 12.....₱ lb 25 ¢
Old Colony, Nos 7 to 12.....₱ lb 25 ¢
Anniston Drab, Nos. 7 to 12...₱ lb 30 ¢
Pearl Braided, cotton, No. 6 ₱ lb., 24¢; Nos. 7 to 12. 23¢.
Eddystone Braided Cotton, No. 6 ₱ lb 27¢
Harmony Cable Laid Italian. No. 7 to 10.....₱ lb 23¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....14¢
Cable Laid India.....12¢
Braided India.....18¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton.....₱ lb 36½¢
Braided, Italian Hemp.....₱ lb 36¢
Braided, Linen.....₱ lb 53¢
Braided, White Cotton or Spot..₱ lb 33¢
Massachusetts, White.....₱ lb 28 ¢
Massachusetts, Drab.....₱ lb 32 ¢
Phœnix, White, No's 7 to 12.....24¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab.....40¢
A quality, White.....35¢
B quality, Drab.....35¢
B quality, White.....30¢
Italian Hemp.....40¢
Linen.....57½¢

Wire, Picture—

List Oct.,'00. 85c&10c&10@85c&10c&10c&5%

Cradles—

Grain.....40c&12½%

Crayons—

White Round Crayons, gross 5½@6c Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.
Jumbo Crayons.....gr. $3.50 } Case lots 30%
Metal Workers' Crayons.gr. $2.50 }
Soapstone Pencils, round, flat or square.....gr. $1.50 }
Rolling Mill Crayons.....gr. $2.50 }
Railroad Crayons (composition) gr. $3.00 }
Zelnicker's Lumber:
Red, Blue, Green.....₱ gro. $6.50
Black.....₱ gro. $4.00
See also *Chalk.*

Crooks, Shepherds'—

Fort Madison, Heavy.....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 Medium Knives, 1847...₱ doz. $3 50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2 50

Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....70%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$80

Enterprise.....25@25&7½%

Nos.	5	10	12	32	39
Each	$2	$3	$2.75	$4.50	$6

Dixon's, ₱ doz.....30&10@40%

Nos.	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....50&10@50%
Little Giant, ₱ doz.....33⅓@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E Food Choppers.....40%
New Triumph No. 605, ₱ doz. $24.00.....30&10@40%
Russwin Food No. 1, $24 00; No. 2, $27.00.....45&10&10%
Sterling.....40@40&10%
No. 1....$2.00 each No. 2..$2.50 each
Woodruff's, ₱ doz.....30&10@40%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons.
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9.55%
Kraut Cutters 36 x 12, 40 x 12.....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater.....₱ doz. $4.00
Sterling, $6.00 each.....33⅓%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ₱ gr....$18@$20
Slaw Cutters, 2 Knife, ₱ gr....$22@$36

Tobacco—

All Iron, Cheap.....doz. $4.25@$4.50
Enterprise.....25&10%
National, ₱ doz. No. 1, $21; No. 2, $18..40%
Sargent's, ₱ doz., No. 2.....60%
Sargent's No 12 and 21.....50&10%

Washer—

Appleton's, ₱ doz. $16.00.....50&10&10%
Bonney's.....33⅓%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger...per doz., $9.00
Iwan's Improved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers, ₱ doz.....$6.50
Iwan's Perfection Post Hole Digger...₱ doz. $8.50
Iwan's Split Handle Post Hole Diggers, ₱ doz.....$7.50
Kohler's Universal.....₱ doz. $15.00
Kohler's Little Giant.....₱ doz. $12.6)
Kohler's Hercules.....₱ doz. $10.00
Kohler's Invincible.....₱ doz. $9 60
Kohler's Rival.....₱ doz. $8.5)
Kohler's Pioneer.....₱ doz. $7.50
Never-Break Post Hole Diggers, ₱ doz. $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Doors Screen—

Phillips', style E, ¾ in.....₱ doz. $10.50
Phillips', style 077, ¾ in.....₱ doz. $8.00
Phillips', style x-y, ¾ in.....₱ doz. $11.00
Porter's Plain, No. 6.....₱ doz. $6 75
Porter's Ornamental, No. 70. ₱ doz. $10.50
Porter's No. 99.....$9.00
Porter's No. 44.....$10.75

Drawers, Money—

Sun Money Drawers, No. 5, ₱ doz. $9.50; No. 6, with Bell, $10.00; No. 6, with Gong, $10.50.
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $12; No. 4, $18

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill..each $1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40&5%
Goodell Automatic Drills..40&5@40&10%
Johns n's Automatic Drills Nos. 2 and 3.....16⅔&10%
Johnson's Drill Points.....16⅔&5&10%
Millers Falls Automatic Drills...33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....33⅓%
Ratchet, Whitney's, P. S. & W.....50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60c&10@60c&10c&10%
Taper and Straight Shank.....60c&10@60c&10c&5%

Drivers, Screw—

Screw Driver Bits..per doz. ..45@75c
Balsey's Screw Holder and Driver, ₱ doz. 2¼ inch, $6; 4-in., $7.30 6-in., $9..40%
Buck Bros' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay's Double Action Ratchet.....35%
Goodell's Auto50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21.....25&10%
Millers Falls, Nos. 11, 12, 41, 42.....15&10%
Never Turn.....60%
New England Specialty Co.....50%
Sargent & Co.'s:
Nos. 1 and 90.....50&10&10%
Nos. 50 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s, Perfect Handle...40%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles30@60&10&10%
No. 80.....70@70&10&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough, Galvanized

Territory.	*L. C. L.*
A. Eastern.....	80c&10%
B. Eastern.....	80c&10c&5%
Central.....	80c&10%
Southern.....	75c&10⅔&5%
S. Western.....	75c&10c&5%

Terms, 2% for cash. Factory shipments generally delivered.
See also *Conductor Pipe and Elbows.*

Elbows and Shoes—

Factory shipments.....60%
Perfect Elbows (S. S. & Co.).....30%

Emery, Turkish—

	4to6	5½to150	Flour
Kegs.....*lb.*	5c	5½c	3½c
½ Kegs.....*lb.*	5½c	5¾c	3¾c
Kegs.....*lb*	5c	6c	
10-lb cans. 10 in case.	6½c	7c	6c
10-lb. cans, less than 10.	10c	10c	8c

NOTE.—*In lots 1 o 3 tons a discount of 10% is given.*

Extractors, Lemon Juice —See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's.....50&10%
Walling's.....50%

Cord and Weight—

Ives.....40%

Faucets—

Cork Lined.....50@50c&10%
Metallic Key, Leather Lined.70@70c&10%
Red Cedar.....40@40c&10%
Petroleum.....70c&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key.....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined.....50&10%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Brand, Cedar.....50%
John Sommer's Perfection Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....35%
Improved, ¼ and ⅜ inch.....35%
Self Measuring:
Enterprise, ₱ doz. $30.00.....40&10%
Lane's, ₱ doz. $36.00.....40&10%
National Measuring, ₱ doz. $36..40&10%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised Nov. 1, 1899.
Best Brands.....70c&5@70c&10c&5%
Standard Brands. 75c&5@75c&10c&10%
Second Quality.....75c&10c&10@80c&5%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....30%

Fixtures, Grindstone—

Net Prices:

Inch....	15	17	19	21	24
Per doz.	$2.15	2.85	3.25	3.75	4.80

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....60&10&10%
Stowell's Giant Grindstone Hanger.....₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures Light.....60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

Base Discounts Aug. 1, 1893, list:
Hay, 2 tine.....50&10&5%
Boys' & Fish, 2 tine.....50&10&5%
Hay & Boys', 3 tine.....60&5%
Hay & Boys', 4 tine.....66⅔%
Champion Hay.....66⅔%
Hay & Header, long 3 tine.....6.%
Header, 4 tine.....65%
Barley, 4 & 5 tine, Steel.....60&20%
Manure, 4 tine.....60&15&2½%
Manure, 5 and 6 tine.....66⅔&2½%
Spading.....70&2½%
Potato Digger, 6 tine.....60&10%
Sugar Beet.....40&10%
Coke & Coal.....40&10%
Heavy Mill & Street.....65%
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&12½%
Acme Hay.....60&10&5%
Acme Manure, 4 tine.....60&20&7½%
Dakota Header.....65&15&5%
Jackson Steel Barley.....65&15&5%
Kansas Header.....66⅔%
W. & C. Favorite Wood Barley.....40%
Plated.—See *Spoons*.

Fountains, Stock—

Double Dewey.....₱ doz. $13.00

Frames— Saw—

White, Straight Bar, per doz. 75@80c
Red, Straight Bar, per doz $1.00@$1.25
Red, Double Brace, per doz. $1.40@1.50

Freezers Ice Cream—

Qt.....	1	2	3	4	6
Each....	$1.25	$1.60	$1.90	$2.20	$2 80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See Pans, Fry.

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Single Taped..3.65
Waterproof Double Taped..4.40
Waterproof Triple Taped..5.15
} 25&10%

Gates, Molasses and Oil—

Stebbins' Pattern..80c10@80c10c&5%

Gauges—

Marking, Mortise, &c......
50c10c&5@50c10c&10c&5%
Chapin-Stephens Co.:
Marking, Mortise, etc.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Fulton's Butt Gauge.....30&10%
Stanley R. & L. Co.'s Butt & Babbet Gauge.....20@20&10&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire P. S. & W. Co.....30&10%

Gimlets— Single Cut—

Nail, Metal, Assorted.gro. $1.50@1.80
Spike, Metal, Assorted.gro. $2.80@3.50
Nail, Wood Handled, Assorted.
gro. $1.75@2.00
Spike, Wood Handled, Assorted
gro. $4.25@4.50

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue—Liquid Fish—

Bottles or Cans, with Brush...25@50%
Cans (½ pts., pts., qts., ½ gal., gal.).....25@48%
International Glue Co. (Martin's).....
40&10@50%

Grease Axle—

Common Grade.....gro. $4.50@5.50
Dixon's Everlasting....10-₱ pails, ea. 85¢
Dixon's Everlasting, in bxs..₱ doz. 1 ₱ $1.20; 2 ₱ $2.00

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz.. $2.00
Pike Mower Knife and Tool Grinder, each.. $6.00
} 35⅓%
Velox Ball Bearing, mounted, Angle Iron Frames..... each, $3.25

Halters and Ties—

Covert Mfg. Co.:
Web.....40&2½%
Jute Rope.....40&5&5%
Sisal Rope.....30%
Cotton Rope.....45&5%
Hemp Rope.....45&2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters.....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties..70%
Sisal Rope Ties.....60&10%

Hammers—

Handled Hammers—

Heller's Machinists'..40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40@40&10&10%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail..33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand.....
50&7½&5@50&10&7½&5%
Machinists' Hammers50&5@50&10&5%
Riveting and Tinners'.....
40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb.....*lb 50c*
3 to 5 lb.....*lb 40c*
} 75&10&5 @80%
Over 5 lb.....*lb. 30c*
Wilkinson's Smiths'.....9½c@10c lb.

Handles—

Agricultural Tool Handles—

Axe, Pick, &c......45@50&5%
Hoe, Rake, &c......45@50&5%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handle.75

Auger, assorted.....gro. $2.50@$2 85
Brad Awl.....gro. $1.65@$1 85
Chisel Handles:
Apple Tanged Firmer, gro. ass'd. $2.40@$2.65
Hickory Tanged Firmer, gro. ass'd. $2.15@$2.40
Apple Socket Firmer, gro. ass'd, $1.75@$1.95
Hickory Socket Firmer, gro. ass'd. $1.45 @ $1.60
Hickory Socket Framing, gro. ass'd. $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, Axe, &c......50%
Hand Saw, Varnished, doz .80@85c
Not Varnished.....65@75c
Plane Handles:
Jack, doz.50c; Jack Bolted.....75c
Fore, doz......$1.45c; *Fore, Bolted* 90c
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle, ₱ gro.....$0.85@$1.50

Hangers—

NOTE.—*Barn Door Hangers are generally quoted per pair, without track. and Parlor Door Hangers per double set with track, &c.*

Barn Door, New Pattern, Round Groove, Regular:

Inch.....	3	4	5	6	8
Single Doz.	$0.90	1.25	1.60	1.95	2.50

Barn Door, New England Pattern, Check Back, Regular:

Inch.....	3	4	5	6
Single Doz......	$1.20	1.35	2.50	3.00

Allith Mfg. Co.
Reliable No. 1.....per.doz. $12.00
Reliable No. 2.....per.doz. $15.00
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60%
Roller Bearing.....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.15
Parlor, Standard.....$3.35
Parlor, New Model.....$6.85
Parlor New Champion.....$2.25
Barn Door, Standard.5o&10&10&5%
Hinged.....$6.40
Covered.....50&10&10%
Special.....50&10&10&5%
Lawrence Bros.:
Advance.....60%
Cleveland.....60&10%
Crown.....60%
Giant.....50&10%
New York.....60%
Peerless.....60&10%
Sterling.....60%
Swing, No. 95.....60%
Union, No. 44, $5.00: No. 45 $7.00; No. 46, $9.00.
McKinney Mfg. Co.:
No. 1, Special. $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
C. S. Smith Mfg. Co.:
Lundy Parlor Door.....50&10%
Monarch Barn Door.....60&10%
Never Jamp Hinge.....50&10%
Peerless.....60&10%
Perfection.....70&5%
Phœnix.....70&5%
Wagner's Adjustable.....70&10%
Warehouse Anti-Friction.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3.....$2.25
Imp'd Wood Track No. 5.....$2.25
Imp'd Steel Track No. 7.....$2.70
Imp'd Steel Track No. 7.....$2.65
Ball B'r'g Steel Track No. 9.....$2.50
Ball B'r'g Steel Track No. 10.....$2.50
Roller B'r'g Steel Track No. 11.....$2.45
Roller B'r'g Steel Track No. 12.....$2.40
Ball B'r'g Steel Track No. 13.....$2.75
Roller B'r'g Steel Track No. 14.....$2 65
Ball B'r'g Trolley Track No. 15.....40%
Ball Brg Trolley Track No. 19...40&5%
Ball Bearing Tandem Trolley Track No. 16.....40%
Silent Adjustable Track No. 18...40%
Auto Adjustable Track No. 22...40%
Trolley B. D. No. 17.....$1.60
Trolley F. D. No. 120.....$2.70
Trolley F. D. No. 121.....$2.85
Trolley F. D. No. 151.....$3.00
Roller Bearing D. D. No. 25.....70&5
Roller Bearing U. S. B. D.....70&5%
Anti Friction B. D.....60&10%
Ives' Wood Track No. 1.....$2.15
Ives' Imp'd Wood Track No. 2...$2.15
Safety Door Hanger Co.:
Storm King Saftey.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. and Foundry Co.:
Acme Parlor Ball Bearing.....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Interstate.....50&10%
Lundy Parlor Door..50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....55&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500.....50&10%
Underwriter's Fire Door.....40%
Wild West Warehouse Door.....50%
Zenith for Wood Track.....50&10%
A. L. Swett Iron Works:
Eagle.....60&10%
Hylo.....50&10%
Perfection.....60%
Pilot.....60%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.....50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing.....60&10&5%
New Era Roller Bearing.....50&10%
O. K. Roller Bearing.....60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing.....60&10%
Tandem Nos. 1 and 2.....60%
Underwriters' Roller Bearing.....40%
Velvet.....50%
Wilcox Auditorium Ball Bearing.30%
Wilcox Barn Trolley No. 123.....40%
WilcoxElv. Door, Nos 122and122½.30%
Wilcox Elv. Door, No. 122.....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century.....50&10&10%
Wilcox O. K. Steel Track.....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing.....40%
Wilcox Wideman Narrow Gauge, Ball Bearing.....40%
For Track, see *Rail*

Extra 5@10% often given.

Hangers, Garment—

Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ₱ doz net 4.50

Hasps—

McKinney's Perfect Hasp, ₱ doz.....50%

Hatchets—

Regular list.....40@40c&5%

Heaters, Carriage—

Clark, No. 3, $2.25; No. 2D, $4.75; No 3D, $4.25; No. 1, $5.50 each.....17%
Clark Coal, $0.75 ₱ doz.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind:
(Victor; National; 1868 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.....	1	2	5
Doz. pair.....	$0.85	1.75	3.50

Mortise Shutter:
(L. & P., O. S., Dixie, &c.)

No.....	1	1½	2	2½
Doz. pair....	$0.70	.65	.60	.55

Mortise Reversible Shutter, (Buffalo, &c.)

No.....	1	1½	2
Doz. pair....	$0.75	.70	.65

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70&75%
Reading's Gravity.....50&5%
Sargent's, Nos. 1, 3, 5, 11 & 13.....70&10&75%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.
Wrightsville H'dware Co.:
O. S.,Lull & Porter.....7 &5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Stenger's Positive Locking, Nos. 1 & 3.....70&10%
Shepard's Noiseless, Nos. 60, 65, 55...70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75%
1868, Old Pat'n, Nos. 1, 3 & 5.....75%
Tip Pat'n, Nos. 1, 3& 5.....75%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75..75%
Steamboat Gravity Locking, No. 10..75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%
Whipple's Patent Automatic.....30%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.....	1	2	3
Hinges with Latches.	$2.00	2.70	5.00
Hinges only.....	$1.40	2.05	3.80
Latches only.....	.70	.70	.35

New England:
With Latch.....doz. ....@$2.00
Without Latch....doz. ....@$1.60
Reversible Self-Closing:
With Latch.....doz. ....@$1.75
Without Latch.....doz. ....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches...	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	70	.70	1.35

Spring Hinges—

Holdback Cast Iron gro...$9.00@9.50
Non-Holdback, Cast iron.....
gro. $8.00@8.50

Extra 5@10% often given.

J. Bardsley
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer Ball Bring Floor Hinges40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges.....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House..25%
Keene's Saloon Door.....25%
Columbian Hdw. Co.:
Acme, Wrt. Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....₱ gr. $9.00
Columbia, No. 18.....₱ gr. $25.00
Columbia, Adjustable, No. 7. ₱ gr. $12.00
Gem, new list.....30%
Clover Leaf.....₱ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co.:
Matchless.....30%
Matchless Pivot.....45%
Shelby Spring Hinge Co.:
Crown Jamb Hinge.....40%
Chief Ball Bearing Floor Hinge.45%
Royal Ball Bearing Floor Hinge..45%
The Stover Mfg. Co.:
Ideal, No.16, Detachable, ₱ gr $12.50
Ideal, No. 4.....₱ gr. $9.00
New Idea No. 4.....₱ gr. $9.00
New Idea, Double Acting.....35%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k..₱ gro. pr. $9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges.....80c&5%
Heavy Strap Hinges.....80c&20c10%
Light T Hinges.....75c&10c&5%
Heavy T Hinges.....75c&5%
Extra Heavy T Hinges..80c&20%
Hinge Hasps.....70%
Cor. Heavy Strap....80c&20c10%
Cor. Ex. Heavy T.....80c&20
} Ex10c&5@10c&10c10%

Screw Hook and Strap.
6 to 12 in.....*lb. 3¼c*
14 to 20 in.....*lb. 3 c*
22 to 36 in.....*lb. 2¾c*

Screw Hook and Eye:
¾ to 1 inch.....*lb. 6 c*
⅝-inch.....*lb. 7 c*
½-inch.....*lb. 9 c*

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers.....35%

Hods, Coal—

	15	16	17	18 inch.
Galv. Open...	$2.50	2.75	3.00	3.25 ₱ doz.
Jap. Open...	$2.00	2.25	2.50	2.75 ₱ doz.
Galv. Funnel.	$3.00	3.25	3.50	3.75 ₱ doz.
Jap. Funnel.	$2.50	2.75	3.00	3.25 ₱ doz.

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar.....each $1.45
Steel Brick.....each $1.10

Hoes— Eye—

Scovil and Oval Pattern.....
60c10@60c10c10%
Grub, list Feb. 23, 1899.....
70c10@75%
D. & H. Scovil.....35%

Handled—

Aug. 1, 1899, List:
Field and Garden.....70c10%
Smith's Patent.....50%
Meadow & Rhode Island.....75%
Black Diamond.....70c10%
Mortar and Street.....70c10c10%
Planters'.....75c12½&%
Cotton.....70c10c10%
Cotton Chopper.....75c12½&%
Weeding Hoes.....66⅔&15%
Steel Weeders.....66⅔&15%
Malleable Weeders.....66⅔&15%
Ft. Madison Cotton Hoe.....70&10&10%
Ft. Madison Crescent Cultivator Hoe per doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight..₱ doz. 66⅔%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe..₱ doz..50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....35%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6¼ in.....$3.35
Acme Weeding.....₱ doz., net, $4.35
W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

Door—

Empire.....50%
Bardsley's.....45%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Hooks—

Cast Iron—

Bird Cage, Reading.....50&10%
Bird Cage, Sargent's List.....60%
Ceiling, Sargent's List.....50&10%
Clothes Line, Reading List.....50%
Clothes Line, Sargent's List. 50&20&10%
Coat and Hat, Sargent's List..50@50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....50%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....50&10%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—

Belt.....80c&10%
Wire C. & H. Hooks.....75@75c&10%
Atlas, Coat and Hat:
Single Cases.....70%
10 Case Lots.....70&10%
Columbian Hdw Co. Gem.....60&10%
Parker Wire Goods Co.: King.....70&10%
Van Wagoner.....70%
Western W. G. Co. Molding.....75%

Wire Goods Co:
Acme.....60&10%
Chief.....70%
Crown.....70&10%
Czar.....65%
V Brace.....70&10%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz. $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@1.25
Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

Miscellaneous—
Hooks, Hench, see *Stops, Bench.*
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass.....Nos.	1	2	3	4
Best.....	$1.50	1.75	2.00	
Common.....	$1.30	1.50	1.50	1.60

Potato and Manure .....60c&15%
Whalletree.....lb. 5¾@6c
Hooks and Eyes:
Brass.....60c&10c&10@70%
Malleable Iron.....70c&5@70c&10%
Covert Mfg. Co, Gate and Scuttle Hooks 35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ₩ doz. $3.35 net
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose Rubber—
Garden Hose, ¾-inch:
Competition.....ft. 4½@ 5 c
3-ply Standard .....ft. 6½@ 7 c
4-ply Standard.....ft. 7½@ 8 c
3-ply extra.....ft. 8½@ 9 c
4-ply extra .....ft. 10 @10½c
Cotton Garden, ¾-in., coupled:
Low Grade .....ft. 6 @7 c
Fair quality.....ft. 8 @9 c

Irons—Sad—
From 4 to 10.....lb. 3¼@3 c
B. B. Sad Irons.....lb. 3¼@3½c
Chinese Laundry.....lb. 4½@5c
Chinese Sad.....lb. 4@4½c
Mrs. Potts', per set:

Nos.....	50	55	60	65
JapdTops	71	68	81	78
TindTops	74	71	84	81

New England Pressing.lb.. 3½@4c

Pinking—
Pinking Irons.....doz. 50@60c

Soldering—
Soldering Coppers 2¼ and 3..19@20c
1½ and 2.....21@22c

Jacks Wagon—
Covert Mfg. Co.:
Auto Screw.....80&5%
Steel.....45&2%
Covert's Saddlery Works':
Daisy.....60&10%
Victor.....60&10%
Lockport.....50%
Lane's Steel.....30&10%

Kettles—
Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See *Ware, Hollow.*

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co,.....50%
Hay and Straw—See *Hay Knives.*

Corn—
Withington Acme, ₩ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—
Standard List.....70&10@70&10c&10%
Bradley's.....35%
C. E. Jennings & Co. Nos. 45, 46..60&10%
Jennings & Griffin. Nos. 51, 52. 60&10&10%
Ohio Tool Co.'s.....70%
Swan's.....70&10&2½%
Watrous.....16⅔&10%
L. & I. J. White.....20&5@25%

Hay and Straw—
Lightning.....₩ doz. $6.50@7.00
Iwan's Sickle Edge.....₩ doz. $10.00
Iwan's Serrated.....₩ doz. $10.00
Maine.....₩ doz. $8.50

Mincing—
Buffalo.....₩ gro. $13.00

Miscellaneous—
Farriers'.....doz. $3.00@5.25
Wostenholm's.....₩ doz. $3.00@3.25

Knobs—
Base, 2¼-inch, Birch, or Maple, Rubber tip, gro .....$1.10@1.15
Carriage, Jap, all sizes..gro. 40@45c
Door, Mineral.....doz. 65@70c
Door, Por. Jap'd.....doz. 70@75c
Door, Por. Nickel....doz. $2.05@2.15
Bardsley's Wood Door, Shutter, &c...15%
Picture, Sargent's.....60&10&10%

Lacing Leather—
See *Belting Leather—*

Ladders, Step Etc.—
Lane's Store.....25%
Myers Noiseless Store Ladders.....30%

Ladies' Melting—
L. & G. Mfg. Co, Low List.....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....45&10%

Lanterns—Tubular—
Regular Tubular No. 0. doz. $4.35@4.75
Lift Tubular..No. 0..doz. $4.75@5.25
Hinge Tubular. No. 0..doz. $4.75@5.25
Other Styles.....40c&10@40c&10%

Bull's Eye Police—
No. 1, 2¼ inch.....$2.50@2.75
No. 2, 3 inch.....$3.75@5.00

Lasts and Stands Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron 50%

Latches—
Thumb—
Roggin's Latches, with screw. doz 35@40c

Leaders Cattle—
Small.....doz. 55c; large, 60c
Covert Mfg. Co.....35%

Lifters, Transom—
R & E.....33⅓%

Lines—

Wire Clothes, Nos...	18	19	20
100 feet.....	$2.20	2.00	1.65
75 feet.....	$1.80	1.70	1.30

Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3.....40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00: No. 3, $7.50 ₩ gr.....20%
Masons' Lines, Shade Cord, &c.: White Cotton. No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½ $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25..20%
Anniston Waterproof Clothes, 50 ft., ₩ gro.: $26.00; Gilt Edge, $24.00; Air Line $24.00; Acme, $19.00; Alabama, $17.00; Empire, $18.00; Advance, $15.00; Oriole, $22.00; Albermarle, $15.00; Eclipse, $13.50; Chicago, $12.50; Standard, $11.00; Columbia, $9.50.

Locks—Cabinet—
Cabinet Locks.....33⅓@33⅓c&7½%

Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co.....50%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—
Stowell's.....50%

Padlocks—
Wrought Iron.....75c&10c&5@30c&5%
R. & E. Mfg. Co. Wrt. Steel and Brass.....75@75&10%

Sash, &c.—
Ives' Patent.:
Bronze and Brass.....62½%
Crescent.....50%
Iron.....62½%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Reading.....net 50%

Machines—Boring—
Com. Upright, Without Augers..$2.00
Com. Angular, Without Augers .$2.25

	Without Augers.	
R. & E. Mfg. Co.:	Upright.	Angular.
Improved No. 3.	$4.25	No. 1. $5.00
Improved No. 4.	3.75	No. 2. 3.38
Improved No. 5.	2.75	
Jennings'..No. 4.	3.15	No. 1, 3.50
Millers' Falls.....		5.75
Snell's, Rice's Pat.	2.50	2.75

Corking—
Reisinger Invincible Hand Power.....
₩ doz. $48.00

Fence—
Williams Fence Machines.....each, $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.30%

Ice Cutting—
Chandler's.....15&10%

Washing—

Boss Washing Machine Co.:	Per doz.
Boss No. 1; Boss Rotary.....	$57.00
Boss No. 7; Dicts Rotary.....	$60.00
Champion Rotary; Banner No. 1..	$54.00
Standard Champion No. 1.....	$48.00
Standard Perfection.....	$36.00
Cintl Square Western.....	$30.00
Uneeda American, Round...	$29.00

Mallets—
Hickory.....45c&5@50%
Lignumvitæ.....45c&5@50%
Tinners', Hickory and Applewood, doz.....50@55c

Mashers, Vegetable—
Western, W. G. Co., Potato.....60&10%

Mats—Door—
Elastic Steel (W. G. Co.).....10%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk*

Mills—Coffee, etc.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1904.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Sun, No. 1c@, 1 lb mill.....₩ doz $3.00
Swift, Lane Bros Co.....30%

Mowers, Lawn—
Net prices are generally quoted.
Cheap.....all sizes. $1.75@2 00
Good.....all sizes, $2.25@2.50

	10	12	14	16-inch
High Grade	4.25	4.50	4.75	5.00

Continental.....60&5%
Great American.....70%
Great American Ball Bearing, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing.....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Philadelphia:
Styles M., S., C., K. T.....70&5%
Style A, all Steel.....50&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, low list...40&5%

Nails—
Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899..85c&10c&10@90%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
A. C.....	25	24	22	21	21	.....40&5%
C. B. K.....	25	24	22	21	21	.....40%
Anchor ...	28	21	30	19	18	.....40&5%
Champ'n.	28	26	25	24	23	.....50%
Coleman....	13	12	12	11	11	.....net
Maud S....	25	23	22	21	21	.....50%
New Haven.	23	21	20	19	18	.....40&5%
Putnam....	22	21	20	19	18	.....33⅓%
New P'tn'm	19	18	17	16	16	.....10&10%

Western, per lb 3½c
Jobbers' special brands, per lb. 3@3½c

Picture—

	1¼	2	2½	3	3½ in.
Brass Head.	.45	.60	.70	.95	1.00 gro.
Por. Head...	..	1.10	1.10	1.10	.. gro.

Nippers, See *Pliers and Nippers.*

Nuts—
Cold Punched: *Off list.*
Mfrs. or U. S. Standard.
Square, plain.....$5.10
Hexagon, plain.....$5.60
Square, C. T. & R.....$5.30
Hexagon, C. T. & R.....$6.00
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank.....$5 80
Hexagon Blank.....$6.30
Square Tapped.....$5 80
Hexagon Tapped.....$6 30

Oakum—
Best or Government.....lb. 6½c
Navy.....lb. 5 c
U. S. Navy.....lb. 6 c
Plumbers' Spun Oakum.....2½c
In carload lots ½c lb. off f.o b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....60c&10%
Tin or Steel.....65c&10%
Zinc.....65c&10%
Chase or Paragon:
Brass and Copper.....45c&10@50%
Tin or Steel.....65c&10%
Zinc.....65c&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70&70&10%
Railroad Oilers etc,.....60@60&10%

Openers—Can—
French.....doz. 35c
Iron Handle.....doz. 25@27c
Sprague, Iron Hdle..per doz. 35@40c
Sardine Scissors...doz. $1.75@$3.00
Marvel.....per doz. $1.25
National.....50%
Stowell's Sprague .....per doz. 35@45c
Tip Top.....per doz. $0.75
Triumph Shear .....₩ gro. $9.00

Egg—
Nickel Plate.....per doz., $2.00
Silver Plate.....per doz., $4.00

Packing—
Asbestos Packing, Wick and Rope, 14½@15c lb.

Rubber—
Sheet, C. I.....8@10c
Sheet, C. O. S.....9@15c
Sheet, C. B. S.....10@14c
Sheet, Pure Gum.....50@65c
Sheet, Red.....50@50c
Jenkins' Standard, ₩ lb 80c.....25@25&5%

Miscellaneous—
American Packing.....7@10c lb.
Cotton Packing.....16@25c lb.
Italian Packing.....9@12½c lb.
Jute.....4@4½c lb.
Russia Packing.....8@11c lb.

Palls—Creamery
S. S. & Co., with gauges.. No 1 $6.25; No. 2, $6.50 ₩ doz.

Galvanized—
Price per doz.

	Quart.....	10	12	14
Water, Regular..		1.50	1.75	2.00
Water, Heavy....		2.75	3.00	3.25
Fire, Rd. Bottom.		2.80	2.60	2.80
Well.....		2.25	2.50	2.75

Pans—Dripping—
Standard List.....60c&10@60&10c&5%

Fry—
Common Lipped:

No.	1	2	3	4	5
Per doz.	$0.35	1.00	1.10	1.30	1.80

Roasting and Baking—
Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10 $5.25; 20, $5.75; 30, $6.25.
Savory, ₩ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₩ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	31.00	39.00	46.00

Paper—Building Paper—

Asbestos:	*lb.*
Building Felt.....	*2¾c*
Mill Board, sheet, 50 x 50 inches	*3½c*
Mill Board, roll, thicker than 1-16 inch.....	*3½c*
Mill Board, roll, 1-16 in. thick and less.....	*2½c*
	Per roll
Rosin Sized Sheathing: 500 sq. ft.	
Light wt., 25 lbs. to roll...	*$0.50@0.55*
Medium wt., 30 lbs. to roll.	*$0.55@0.60*
Heavy wt., 40 lbs. to roll...	*$0.65@0.70*
Black Water Proof Sheathing, 500 Sq. ft., 1 ply, 65c; 2 ply, 85c; 3 ply, $1.10; 4 ply, $1.25.	
Deafening Felt, 9, 6 and 4¼ sq. ft. to lb., ton	*$41.00*
Red Rope Roofing, 250 sq. feet per roll.....	*$1.75*

NOTE.—*These goods are often sold at delivered prices.*

Tarred Paper.
1 ply (roll 300 sq. ft.), ton..$32.50@35.00
2 ply, roll 108 sq. ft.....55@60c
3 ply, roll 108 sq. ft.....78@80c
Slater's Felt (roll 500 sq. ft.).....75c
NOTE.—*Above prices often include delivery, and are for Eastern territory, where prices are controlled by agreement between the manufacturers. In open territory much lower prices are current.*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.00

Sand and Emery—
Flint Paper and Cloth..50c&10@60%
Garnet Paper and Cloth.....25%
Emery Paper and Cloth...50c&10@60%

Parers—Apple—

Advance.....	₩ doz.	$4.50
Baldwin.....	₩ doz.	$5.00
Bonanza Improved.....	each	$6.50
Daisy	₩ doz.	$4.00
Dandy.....	each	$7.50
Eureka Improved.....	each	$20.00
Family Bay State.....	₩ doz.	$15.00
Improved Bay State.....	₩ doz.	$36.00
Little Star.....	₩ doz.	$5.00
New Lightning.....	₩ doz.	$7.50
Reading 72.....	₩ doz.	$4.00
Reading 78.....	₩ doz.	$7.00
Rocking Table.....	₩ doz.	$6.00
Turn Table '98.....	₩ doz.	$6.75
White Mountain.....	₩ doz.	$6.00

Potato—
Saratoga.....₩ doz. $7.00
White Mountain.....₩ doz. $6 00

Picks and Mattocks—
List Feb. 25, 1899 .....70c&5@70c&10%

Pinking Irons—
See *Irons, Pinking.*

Pins—Escutcheon—
Brass .....60@60c&10%
Iron, list Nov. 11, '85.....60@60c&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....50c&10
Extra Heavy, 2-6 in.....65%
Fittings 70%

Pipe, Merchant,
Steel Carload Lots, f.o.b, Pittsburgh.

Merchant Pipe.	*Black.*	*Galvanized.*
⅛, ¼, ⅜ inch.....	68%	58%
½ inch.....	71%	61%
¾ to 6 inch.....	75%	65%
7 to 12 inch.....	71%	61%

Pipe, Sewer—
Jobbers' Prices—
Standard Pipe and Fittings, 2 to 2½ in.
New England.....67%
New York and New Jersey.....70%
Maryland, Delaware, East Penn.73%
West Penn and West Va.....73%
Virginia.....75%
Ohio, Michigan and Ky.....75%
Indiana.....77%
Carload lots are generally delivered.

Pipe, Stove—
Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints....	$7.50	$8 50
6 in., per 100 joints....	8.00	9.00
7 in., per 100 joints....	9.00	10.00

Planes and Plane Irons—
Wood Planes—
Bench, First quality....40c&5@40c&10%
Bench, Second qual....50c&5@50c&10%
Molding.....33⅓c&5@33⅓c&10%
Bailey's (Stanley R. & L. Co) 5&10@25&10&10%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Gage Self Setting.....35%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union.....60%

Iron Planes—
Bailey's (Stanley R. & L. Co) 25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60@60&10%
Union.....60%

Plane Irons—
Wood Bench Plane Irons.....30c&5@30c&10%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co....20&10@20&10&10%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand.
Kohler's Eclipse.....₩ doz. $8.50

Plates—
Felloe.....lb. 3¼@4c
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 .....50%

Pliers and Nippers—
Button Pliers.....75@75c&10%
Gas Burner, per doz., 5 in., $1.25@ $1.50; 6 in., $1.45@$1.50
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50@50&5%
Bernard's:
Cutting Nippers.....33⅓%
Parallel, Pliers.....33⅓%
Paragon Pliers.....50%
Lodi Pliers.....30%
Elm City Fence Pliers.....33⅓%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Improved Button.....70&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers, and Tools 40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.....40@40&10&10%
Pocket Levels.....30@30&10&10%
Level Glasses.....60@60&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70
C. E. Jennings & Co.'s Iron.....25&10%
C. E. Jennings & Co.'s Iron, Adjustable. 33⅓&10%
Stanley R. & L. Co....20&10@30&10&10%

Stanley's Duplex..... 20@20&10&10%
Woods' Extension..... 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00..... 50%
Acme.....1¾in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2 in. ₱ doz 50%
Grand Rapids All Steel Noiseless.... 50%
Ideal.....70&5%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 18½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood.....50@50&10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	*2.50*	*2.75*	*3.00*
Inch..	3	3¼	3½	3¾	4
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Plunger Cup Leathers—Per 100:

Inch	2½	3	3½	4
	$2.75	*3 85*	*5.00*	*6.00*

Barnes Dbl. Acting (low list).... 50&10%
Contractors' Rubber Diaphragm No. 2 B. & L. Block Co.....$16.00
Daisy Spray Pump..... ₱ doz. $7.20
Flint & Walling's Fast Mail (low list).55%
Flint & Walling's Pitcher Spout.....80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$7.20
Myer's Pumps, low list.....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

Punches—

Saddlers' or Drive, good..doz. 65@70c
Spring, single tube, good quality... $1.75@2.00
Revolving (4 tubes)...doz. $3.50@3.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Benard Spring Belt Punches.....33⅓%
Lodi Spring Belt Punches.....30%
Morrill's No. 1 (A.B.C.), ₱ doz., $15.00..50%
No. 2, ₱ doz. $22.50.....50%
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Paragon Spring Belt Punches.....50%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co.35@35&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

	½	¾	¾ *in.*	
	$1.70	*$2.10*	*$3 00*	*100 feet.*

Angular for Sq. Groove Wheels:

	Small.	*Med.*	*Large.*	
	$1.50	*1 90*	*2.60*	*100 feet.*

Sliding Door, Iron Painted..2¼@2¾c
Sliding Door, Wrought Brass, 1¼ in.....lb.36c..30%
Allith Mfg. Co., No. 1, Reliable Hanger Track, ₱ foot.....8¢
Allith Mfg. Co., No. 2, Reliable Hanger Track, ₱ foot.....10¢
Cronk's Double Braced Steel Rail, ₱ foot.....3½¢
Cronk's O. N. T. Rail.....3½¢
Lane's Hinged Track, ₱ 100 ft., 1 in., $3.70; 1¼ in., $4.40
Lanes' O. N. T., ₱ 100 ft., 1 inch, $3.00; 1¼ inch, $3.70; 1½ inch, $4.00.
Lanes' Standard, 1¼ in., ₱ 100 ft 4.00
Lawrence Bros., ₱ ft. 11¢.....60%
Lawrence Bros. New York.....3½¢
McKinney's Hinged Hanger Rail ₱ foot, 11¢.....50%
McKinney's None Better..... ₱ ft. 3½¢
McKinney's Standard ..... ₱ ft. 4 c
Myers' Stayon Track .....50&10%
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U.S. Standard Safety.....60%
Smith's Wrought Bracket, Plain.....3½¢
Smith's Special .....4½¢
Smith's Never Jump, per ft. 11¢.....50%
Smith's Plain Steel 30%
Smith's Milled Steel.....4½¢
Stowell's Cast Rail ..... ₱ ft. 12½ c
Stowell's Steel Rail, Plain.....25%
Stowell's Wrought Bracket, 1 3-16 in.... ₱ ft. 3c
Stowell's Wrought Bracket, 1¼x3-16.... ₱ ft. 7¢
Swett's Hylo, per ft. 11¢.....50&10%
Swett's P. L. B. Steel Rail, ₱ 100 ft. $3.00

Rakes—

Net Prices, Malleable Rakes:

	10	*12*	*14*	*16-tooth*
Shank	*$1.50*	*1.60*	*1.75*	*1.85*
Socket	*$1.65*	*1.80*	*1.95*	*2.10*

Steel, Garden and Gravel, Aug. 1, '99 List 70%
Weldless Steel ..... 75@5%
Malleable Iron, Garden.....70@10%
Lawn Rakes, Metal Head, per doz.,
20 teeth.....$3.25@3.50
24 teeth.....$3.50@3.75
Fort Madison Red Head Lawn.....$2 25
Fort Madison Blue Head Lawn.....$2.70
Jackson Lawn, 29 and 30 teeth, ₱ doz., net, $4.25

Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.45
Lawn Queen, 24-tooth, ₱ doz $3.60
Paragon, 20 tooth, ₱ doz.....$2.75
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$2.88
Malleable Garden, 14-tooth, ₱ doz..$2.00

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5&10&10&5%
McCaffrey's American Standard..... 60&10&5%
New Nicholson.....70&10&75%
See also *Files.*

Razors—

Borasic.....60 & 10%
Fox Razors, No. 42, .. ₱ doz. $20.00
Fox Razors, No. 44, .. ₱ doz, $20.00
Fox Razors, No. 84, Flatina, ₱ doz. $25.00

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1¾ and 2 in., 16@19c
Auger Mortise, no Face Plate, per doz. 1¾ and 2 in..... 16@19c
Auger Mortise, with Face Plate, per doz., 1¾ and 2 in..... 18@19c
Acme.....1¾ in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2 in. ₱ doz 50%
Grand Rapids All Steel Noiseless.... 50%
Ideal.....70&5%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy....1¾ in., 14½¢; 2 in., 18½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....80@80&10%
Wood.....50@50&10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	*2.50*	*2.75*	*3.00*
Inch..	3	3¼	3½	3¾	4
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Plunger Cup Leathers—Per 100:

Inch	2½	3	3½	4
	$2.75	*3 85*	*5.00*	*6.00*

Barnes Dbl. Acting (low list).... 50&10%
Contractors' Rubber Diaphragm No. 2 B. & L. Block Co.....$16.00
Daisy Spray Pump..... ₱ doz. $7.20
Flint & Walling's Fast Mail (low list).55%
Flint & Walling's Pitcher Spout.....80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$7.20
Myer's Pumps, low list.....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

Punches—

Saddlers' or Drive, good..doz. 65@70c
Spring, single tube, good quality... $1.75@2.00
Revolving (4 tubes)...doz. $3.50@3.75
Bemis & Call Co.'s Cast Steel Drive....50%
Bemis & Call Co.'s Check.....55%
Benard Spring Belt Punches.....33⅓%
Lodi Spring Belt Punches.....30%
Morrill's No. 1 (A.B.C.), ₱ doz., $15.00..50%
No. 2, ₱ doz. $22.50.....50%
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Paragon Spring Belt Punches.....50%
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Tinners' Hollow, P., S. & W. Co.35@35&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

	½	¾	¾ *in.*	
	$1.70	*$2.10*	*$3 00*	*100 feet.*

Angular for Sq. Groove Wheels:

	Small.	*Med.*	*Large.*	
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Lawrence Bros. New York.....3½¢
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McKinney's None Better..... ₱ ft. 3½¢
McKinney's Standard ..... ₱ ft. 4 c
Myers' Stayon Track .....50&10%
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Safety Door Hanger Co.'s U.S. Standard Safety.....60%
Smith's Wrought Bracket, Plain.....3½¢
Smith's Special .....4½¢
Smith's Never Jump, per ft. 11¢.....50%
Smith's Plain Steel 30%
Smith's Milled Steel.....4½¢
Stowell's Cast Rail ..... ₱ ft. 12½ c
Stowell's Steel Rail, Plain.....25%
Stowell's Wrought Bracket, 1 3-16 in.... ₱ ft. 3c
Stowell's Wrought Bracket, 1¼x3-16.... ₱ ft. 7¢
Swett's Hylo, per ft. 11¢.....50&10%
Swett's P. L. B. Steel Rail, ₱ 100 ft. $3.00

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	10	*12*	*14*	*16-tooth*
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20 teeth.....$3.25@3.50
24 teeth.....$3.50@3.75
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Jackson Lawn, 29 and 30 teeth, ₱ doz., net, $4.25

Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.45
Lawn Queen, 24-tooth, ₱ doz $3.60
Paragon, 20 tooth, ₱ doz.....$2.75
Paragon, 24-tooth, ₱ doz.....$3.00
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See also *Files.*

Razors—

Borasic.....60 & 10%
Fox Razors, No. 42, .. ₱ doz. $20.00
Fox Razors, No. 44, .. ₱ doz, $20.00
Fox Razors, No. 84, Flatina, ₱ doz. $25.00

Pliers—Gas—

Bemis & Call Co.'s Hinge Joint.....50%
Bemis & Call Co.'s Monkey Tail.....50%
Bemis & Call Co.'s Parallel Jaw.....50%
Bemis & Call Co.'s Pattern.....50%
Bemis & Call Co.'s Tongue and Groove.....50%
Bemis & Call Co.'s Universal.....50%
Bemis & Call Co.'s Vise Grip.....50%
Bemis & Call Co.'s Wrench.....50%
Bemis & Call Co.'s Wrench Tongue and Groove.....50%
Diamond, No. 1.....$1.50
Diamond, No. 2.....$1.75
Diamond, No. 3.....$2.00
Diamond, No. 4.....$2.25
Diamond, No. 5.....$2.50
Diamond, No. 6.....$3.00
Diamond, No. 7.....$3.50
Diamond, No. 8.....$4.00
Diamond, No. 9.....$4.50
Diamond, No. 10.....$5.00
Diamond, No. 11.....$5.50
Diamond, No. 12.....$6.00
Diamond, No. 13.....$6.50
Diamond, No. 14.....$7.00
Diamond, No. 15.....$7.50
Diamond, No. 16.....$8.00
Diamond, No. 17.....$8.50
Diamond, No. 18.....$9.00
Diamond, No. 19.....$9.50
Diamond, No. 20.....$10.00
Diamond, No. 21.....$10.50
Diamond, No. 22.....$11.00
Diamond, No. 23.....$11.50
Diamond, No. 24.....$12.00
Diamond, No. 25.....$12.50
Diamond, No. 26.....$13.00
Diamond, No. 27.....$13.50
Diamond, No. 28.....$14.00
Diamond, No. 29.....$14.50
Diamond, No. 30.....$15.00
Diamond, No. 31.....$15.50
Diamond, No. 32.....$16.00
Diamond, No. 33.....$16.50
Diamond, No. 34.....$17.00
Diamond, No. 35.....$17.50
Diamond, No. 36.....$18.00
Diamond, No. 37.....$18.50
Diamond, No. 38.....$19.00
Diamond, No. 39.....$19.50
Diamond, No. 40.....$20.00
Diamond, No. 41.....$20.50
Diamond, No. 42.....$21.00
Diamond, No. 43.....$21.50
Diamond, No. 44.....$22.00
Diamond, No. 45.....$22.50
Diamond, No. 46.....$23.00
Diamond, No. 47.....$23.50
Diamond, No. 48.....$24.00
Diamond, No. 49.....$24.50
Diamond, No. 50.....$25.00

Pliers—Gas—

Bemis & Call Co.'s Hinge Joint.....50%
Bemis & Call Co.'s Monkey Tail.....50%
Bemis & Call Co.'s Parallel Jaw.....50%
Bemis & Call Co.'s Pattern.....50%
Bemis & Call Co.'s Tongue and Groove.....50%
Bemis & Call Co.'s Universal.....50%
Bemis & Call Co.'s Vise Grip.....50%
Bemis & Call Co.'s Wrench.....50%
Bemis & Call Co.'s Wrench Tongue and Groove.....50%
Diamond, No. 1.....$1.50
Diamond, No. 2.....$1.75
Diamond, No. 3.....$2.00
Diamond, No. 4.....$2.25
Diamond, No. 5.....$2.50
Diamond, No. 6.....$3.00
Diamond, No. 7.....$3.50
Diamond, No. 8.....$4.00
Diamond, No. 9.....$4.50
Diamond, No. 10.....$5.00
Diamond, No. 11.....$5.50
Diamond, No. 12.....$6.00
Diamond, No. 13.....$6.50
Diamond, No. 14.....$7.00
Diamond, No. 15.....$7.50
Diamond, No. 16.....$8.00
Diamond, No. 17.....$8.50
Diamond, No. 18.....$9.00
Diamond, No. 19.....$9.50
Diamond, No. 20.....$10.00
Diamond, No. 21.....$10.50
Diamond, No. 22.....$11.00
Diamond, No. 23.....$11.50
Diamond, No. 24.....$12.00
Diamond, No. 25.....$12.50
Diamond, No. 26.....$13.00
Diamond, No. 27.....$13.50
Diamond, No. 28.....$14.00
Diamond, No. 29.....$14.50
Diamond, No. 30.....$15.00
Diamond, No. 31.....$15.50
Diamond, No. 32.....$16.00
Diamond, No. 33.....$16.50
Diamond, No. 34.....$17.00
Diamond, No. 35.....$17.50
Diamond, No. 36.....$18.00
Diamond, No. 37.....$18.50
Diamond, No. 38.....$19.00
Diamond, No. 39.....$19.50
Diamond, No. 40.....$20.00
Diamond, No. 41.....$20.50
Diamond, No. 42.....$21.00
Diamond, No. 43.....$21.50
Diamond, No. 44.....$22.00
Diamond, No. 45.....$22.50
Diamond, No. 46.....$23.00
Diamond, No. 47.....$23.50
Diamond, No. 48.....$24.00
Diamond, No. 49.....$24.50
Diamond, No. 50.....$25.00

Pulleys—Single Wheel—

Inch.....	*2*	*2½*	*3*
Awning...doz	*$0.55*	*.85*	*1.15*

Hay Fork, Swivel or Solid Eye..... doz., 4 in., $1.15; 5 in., $1.40

Inch	*2*	*2½*	*2½*
Hot House.doz	*$0.70*	*.90*	*1.35*
Inch	*1¼*	*1½*	*1¾*	*2*
Screw.....doz	*$0.16*	*.19*	*.23*	*.30*
Inch	*1¼*	*2*	*2½*	*2¾*
Side.....doz	*$0 50*	*.50*	*.55*	*.63*
Inch.....	*1¼*	*1¾*	*2*	*2½*
Tackle ....doz	*$0.50*	*.42*	*.58*	*1.00*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction...60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Red Devil.....60%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Safety Razors.....40%
New Gem, in Tin Boxes..... ₱ doz. $12.00
New Gem, Extra Blades ..... ₱ doz. $8.35
Gem Outfits (Razor, Strop, etc.)..... ₱ doz. $25.60
Complete Razor, extra Blade in Leather Case..... ₱ doz. $27.00
Silbersecin.....40%

Reels— Fishing—

Bishop's Independent Fish Reel Spooler, ₱ doz.....$30.00
Hendryx:
M 6, Q 6, A 6, B 6, M 9½, M 16, Q 16, A 16, B 16, 4008, Rubber Populo, Nickeled Populo.....20%
Aluminum, German Silver, Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....30%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*

Black Jap
White Jap
Bronzed
Nickel Plated
Electro Plated
75@75&10

Registers, Cash—

Sun, No. 19, Metal Cabinet.....$30.00
Sun, No. 10, Wood Cabinet.....$25.00

Revolvers—

Single Action.....85@90c
Double Act'n, except 44 cal. $1.90
Double Action, 44 caliber.. .....$2.05
Automatic $3.50
Hammerless.....$4.10
Note.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade

16 in., per doz.....$2.25@2.50
17 in., per doz.....$2.50@2.75
18 in., per doz.....$2.75@3.00

Rings and Ringers—

Bull Rings—

	₱	2½	*3 Inch*
Steel	*$0 70*	*0.75*	*0.80 doz.*
Copper	*1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing: 2 in., ₱ doz., $1.50; 2½ in., $1.75; 3 in., $2

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.25@4.50
Hill's Ringers, Gray Iron, doz. 50@55c
Hill's Ringers, Mal. Iron, doz. 70@75c
Blair's Rings.....per gro. $5.00@5.25
Blair's Ringers...per doz. $0.60@ .65
Brown's Rings.....per gro. $5.25@5.50
Brown's Ringers..per doz. $0.65@ .70

Rivets and Burrs—

Copper.....60@60&5%
Iron or Steel.....75@5@75&10%

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....66⅔%
Cronk's Brinkerhoff.....66⅔%
Lane's Stay .....33⅓&5%
Stowell's Barn Door Stay..... ₱ doz. $1 00

Rope—

Manila, 7-16 in. diam. and larger, tarred or untarred.....lb. 11 @11½c
Manila, Hay, Hide and Bale Ropes, Medium and Coarse..... lb. 11 @11½c
Sisal, 7-16 in. diam. and laroer:
Mixed.....lb. 7½@ 7¾c
Pure.....lb. .. @ 9 c
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed .....lb. 7½@ 7¾c
Pure.....lb. .. @ 9 c
Sisal, Tarred, Medium Lath Yarn:
Mixed.....lb. 7 @ 7¼c
Pure.....lb. .. @ 8 c
Cotton Rope: —Lb.—
Best.....¼-in. and larger.. 13@15c
Medium..¼ in. and larger.. 16@18c
Com ....¼-in. and larger..12@13c
Jute Rope:
Thread No. 1, ¼-in. and up, lb. 6 c
Thread No. 2, ¼-in. and up, lb. 5½c
Old Colony Manila Transmission Rope, ₱ lb 17½¢

Wire Rope—

Galvanized.....47½&5%
Plain .....55&5%

Ropes, Hammocks—

Covert Mfg. Co.:
Jute .....40&5&5%
Sisal 30%
Covert Saddlery Works. .....60&5%

Rules—

Boxwood.....60&10&10%
Ivory.....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood.....60@60&10%
Ivory.....35@35&10&10%
Miscellaneous.....50@50&10&10%
Combination.....55@55&10%
Stationers'.....10@10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60&10%
Stanley R. & L. Co.:
Boxwood .....60@60&10%
Ivory.....35@35&10&10%

Upson Nut Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers

—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular.....50%
Band .....50&10@60%
Cross Cuts .....35&5%
Mulay, Mill and Drag 50%
One-Man Saw.....40%
Wood Saws 40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames....30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&5%
Disston's:
Circular, Solid and Inserted Tooth..30%
Band, 3 to 14 in. wide.....0%
Band, ¼ to 2½.....30%
Crosscuts.....45%
Narrow Crosscuts.....50%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Hand Saws, Nos 7 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Keyhole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25&10%
Butcher Saws.....30&10%
Compass and Key Hole Saws.35&5&10%
Framed Wood Saws.....30&10%
Hand Saws.....20&2½&10%
Wood Saw Blades.....30&10%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws.....30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....25%
Compass, Keyhole, &c .....25@25&7½%
Wood Saws .....25@35&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—

Atkins' Hack Saw Blades A A A. ... 25%
Disston:
Concave Blades.....25%
Keystone.....40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best.....25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.... 35&5&10%
Hack Saws, Nos. 175, 180, complete. 35&5&10%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames ... 35&5&10%
Griffin's Hack Saw Blades.....35&5&10%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....35%
Sterling Hack Saw Frames .....30&10&5%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—

Bishop's Lightning..... ₱ doz. $2 00
Covert's Saddlery Works .....60&10%

Scales—

Family, Turnbull's.....50@50&10%
Counter:
Hatch, Platform, ½ oz to 4 lbs. doz. $5.50
Two Platforms, ½ oz to 8 lbs. doz. $16
Union Platform, Plain...$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective," 25 lbs.....30%
Union or Family No. 2 ..... 60%
Portable Platform (reduced list).....50%
Wagon or Stock (reduced list)....25@35%
Pelouze Scales—Household, Counter, Candy, Ice, Postal, Computing.....50%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.....50%

Scrapers—

Box, 1 Handle.....doz. $2.00@2.25
Box, 2 Handle.....doz. $2.60@2.85
Ship Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 30@30&10%
Chapin-Stephens Co., Box.....50@50&10%

Screens, Window, and Frames—

Flyer Pattern Screens...60&5@60&5&2½%
Maine Screen Frames .....40&10&5%
Perfection Screens. ....60&5@60&5&2½%
Phillips' Screen Frames..60&5@60&5&2½%
Porter's:
Fairview Screens.....60&5@60&5&2½%
Hummer Screens.....60&5@60&5&2½%
Klondike Screens.....60&5@60&5&2½%
See also *Doors.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in., $2.50@2.75 : 1½, $3.00@3.25; 1¾, $3.50@3.75
Bench, Wood, Beech....doz. 30@30&5
Hand, Wood.....30@30&5%
R. Bliss Mfg. Co., Hand.....30%
Chapin-Stephens Co., Hand.....30@30&10%
Ohio Tool Co., Bench and Hand.....30%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....80@5%
Coach and Lag, Gimlet Point, list Oct. 1, '99.....80%
Hand Rail, list Jan. 1, '81..70@10@75%

Jack Screws—

Standard List.....75@10@30@5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50@50&5%
Sargent.....70%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron..50@50@10%
Flat or Round Head, Brass50@50@10%

Set and Cap—

Set (Iron or Steel).....75% } *Extra*
Sq. Hd. Cap.....70% } *10@5*
Hex. Hd. Cap.....70% } *often*
Rd. or Fillister Hd. Cap 65% } *given.*

Wood—

List July 23, 1903.
Manufacturers' printed discounts :
Flat Head, Iron.....87½@10@...%
Round Head, Iron.....85@10@....%
Flat Head, Brass .....85@10@....%
Round Head, Brass .....80@10@....%
Flat Head, Bronze....77½@10@ ...%
Round Head, Bronze.....75@10@...%
Drive Screws.....87½@10%

Scroll Saws—See *Saws, Scroll.*

Scythes— Per doz.

Clipper Pattern, Grass...$4.25@$5.00
Full Polished Clipper.....$4.75@$5.50
Grain.....$7.00@$7.50
Clipper, Grain.....$7.75@$8.25
Weed and Bush.....$4.50@$5.00

Seeders— Raisin—

Enterprise.....25@30%

Sets— Awl and Tool—

Brad Awl and Tool Sets :
Wood Hdle., 10 Awls doz. $2.00@2.25
Wood Hdle., 14 Awls, 6 Tools .. doz. $3.50@3.60
Aiken's Sets, Awl and Tools :
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders.....30&10%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior :
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....30@30&10&10%

Garden Tool Sets—

Ft. Madison, Three Pieces, Hoe, Rake and Shovel.....₱ doz. sets.....$9.00

Nail—

Square.....per gro. $2.25@2.50
Round, Blk. and Pol., assorted..... gro. $1.80@2.00
Octagon.....gro. $4.50@5.75
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Mayhew's.....per gro. $9.00
Snell's Corrugated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

Rivet—

Regular list.....70@10@75%

Saw—

Aiken's:
Genuine.....50&10%
Imitation.....50&10%
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....40%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.63.....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 9%, $15.63.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal, Cross Cut .....₱ doz. $8.50
Royal, Hand.....₱ doz. $5.00
Taintor Positive.....₱ doz $6.75

Shaving—

Fox Shaving Sets, No. 30, per doz, $24.00net

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%

Shaves Spoke—

Iron.....doz. $1.00@1.15
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.) ..... 30@40&10&10%
Chapin-Stephens Co .....30@30&10&10%
Goodell's, ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70@70&10%
" Nickel.....60@60&10%
Fair qual. Jap.....30@30&5%
" Nickel.....75@75&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....20%
Wilkinson's Hedge .....1900 list 45%
Wilkinson's Branch, Lawn and Border..... 40%
Wilkinson's Sheep .....1900 list, 50%

Tinners' Snips—

Steel Blades .....20&5@30&10
Steel Laid Blades .....40&10@50%
Forged Handles, Steel Blades, Berlin ..... 40@40&10%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6¼ to 10 inch .....40@7½&10%
Niagara Snips 40%
P., S & W. Co.....20%
Triumph Pipe Shear.....₱ doz. 9.00

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25%
Disston's Pruning Hook, ₱ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades.....40@40&5%
Orange Shears.....50&10@50&20%
Grape .....40&10@50%
Tree Pruners.....75%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Patent Roller Hatfield's, Sargent's list, 70&10%
Reading.....50%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....30%

Sliding Shutter—

Reading list.....50%
R. & E. list.....33⅓%
Sargent's list.....50&10%

Shells— Shells, Empty—

Brass Shells, Empty :
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty :
Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 15 and 20 gauge.....20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%
Robin Hood, Low Brass.....20&10%
Robin Hood, High Brass.....50&10%

Shells, Loaded—

Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg:
Iron.....per keg $4.00
Steel.....per keg 3.85
Burden's, all sizes, ₱ keg.....$3.90

Shot—

Drop, up to B, 25-lb. bag.....$1.60
Drop, B and larger, per 25-lb. bag $1.85
Buck, 25-lb. bag.....$1.85
Chilled, 25-lb. bag.....$1.85

Shovels and Spades—

Association List, Nov. 15, 1902....40%

Sieves and Sifters—

Hunter's Imitation..gro. $10.50@11.00

Buffalo Metallic mued. S. S.		Co., ₱ gr.:
14&16	16&18	18&20
$13.20	$13.50	$14.40

National Mfg. Co.:
Victor.....per gro. $12.00
Surprise.....per gro. $11.00
No Name.....per gro. $11 00
Shaker Barlers Pat.) Flour Sifters.. ₱ doz., $2.00.....90%

Sieves, Tin Rim—

Per dozen.

Mesh	*14*	*16*	*18*	*20*
Black, full size...	*$1.20*	*1.25*	*1.30*	*1.35*
Plated, full size	*$1.30*	*1.35*	*1.40*	*1.45*
Black, scant....	*....*	*$0.95*	*1.00*	*1.05*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz.....$0.90@0.95
Mesh 20, Nested, doz..... 1.00@1.05
Mesh 24, Nested, doz..... 1.30@1.40

Sinks—

Cast Iron—

Standard list.....60@60&10%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Skeins, Wagon—

Cast Iron.....75@75&10%
Steel.....40@40&10%

Slates, School—

Factory Shipments.

"D" Slates.....40&10%
Noiseless Slates.....60&5 tens

Slaw Cutters—See *Cutters.*

Slicers, Vegetable—

Sterling No. 10, $2.00.....33⅓

Snaps, Harness—

German.....40@40&10%
Covert Mfg. Co.:
Derby.....20&5&2%
High Grade.....45%
Jockey.....30&10%
Trojan.....45%
Yankee.....30&5&2%
Yankee, Roller.....30&5&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
Oneida Community Snap Swivel.....60%
Sargent's Patent Guarded .....66⅔&10%

Snaths—

Scythe.....45%

Snips, Tinners'—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality..... 50&10@60&5%
Cheap..... 60@60&10%
International Silver Co.
1847 Rogers Bros. and Rogers & Hamilton.....40&10%
Rogers & Bro., William Rogers Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—

German Silver..... 60@60&5%
Cattaraugus Cutlery Co.:
Yukon Silver.....50%

Tinned Iron—

Teas.....per gro. 45@50c
Tables.....per gro. 90c@$1.00

Springs— Door—

Chicago (Coil)... .....40&10%
Gem (Coil).....20%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....₱ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.

1¼ in. and Wider :
Black or ⅛ Bright, lb.....4¾@5 c
Bright, lb, ...5¼@5½c
Painted Seat Springs :
1½ x 2 x 26, per pr.....50@55c
1½ x 2 x 28 per pr.. .....60@65c
1½ x 3 x 28 and narrower, per pr. 80@85c

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%

Squares—

Nickel plated.... } Last Jan. 5, 1900.
Steel and Iron... } 70&10@75&10%
Rosewood Hdl Try Square and T-Bevels .....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels.....70%
Winterbottom's Try and Miter..... 40&10@40&10&10%

Squeezers— Lemon—

Wood, Common, gro., No. 0, $5.25 @$5.50 : No. 1, $6.25@$6.50.
Wood, Porcelain Lined. Cheap .....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined.....doz. $1.75

Staples—

Barbed Blind.....lb. 6@6½c
Electricians', Association list..... 80&10&10&10%
Fence Staples, Plain $2.25; Galvanized.....$2.55
Poultry Netting, Staples....per lb.. 3½@3½c
Grand Crossing Tack Co.'s list....80&10%

Steels, Butchers'—

Dick's.....30%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%

Steelyards..... .....30@30&10%

Stocks and Dies—

Blacksmiths'.....50@50&10%
Curtis Reversible Ratchet Die Stock.25%
Derby Screw Plates.....25%
Gardner Die Stocks No. 1.....50%
Gardner Die Stocks, larger sizes.....40%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%

Stone—

Scythe Stones—

Chicago Wheel & Mfg. Co:
Gem Corundum, 10 inch, $8.00 per gro., 12 inch, $10.80
Norton Emery Scythe Stones:
Less than gross lots.....₱ gro. $9.00
One gross or more.....₱ gro. $7.20
Lots of 10 gross or more:.....₱ gro $6.00
Pike Mfg. Co. 1901 list:
Black Diamond S. S....₱ gro. $12.00
Lamoille S. S. .....₱ gro. $11.00
White Mountain S. S.....₱ gro. $9.00
Green Mountain S. S.....₱ gro. $6.00
Extra Indian Pond S. S.₱ gro. $7.50
No. 1 Indian Pond S. S..₱ gro. $7.00
No. 2 Indian Pond S. S..₱ gro. $4.50
Leader Reed End S. S....₱ gro $4.50
Balance of 1901 list 33⅓% } 40%

Oil Stones, &c.

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit.....50%
Gem Corundum Axe, Single or Double Grit.....55%
Gem Corundum Slips.....55%
Gem Corundum Razor Hones.....50%
Pike Mfg. Co. 1901 list: ₱ b
Arkansas Stone, No. 1, 3 to 5¼ in. $2.80
Arkansas Stone, No. 1, 5¼ to 8 in. $3.50
Arkansas Slips No. 1 .....$4.00
Lily White Washita 4 to 8 i .....60¢
Rosy Red Washita, 4 to 8 in .....60¢
Washita Stone, Extra, 4 to 8 in..50¢
Washita Stone, No. 1, 4 to 8 in..40¢
Washita Stone, No. 2, 4 to 8 in..30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
India Oil Stones (entire list) .....33⅓% } 33⅓%
Hindostan No. 1, Regular.....₱ b 8¢
Hindostan No. 1 Small.....₱ b 10¢
Axe Stones (all kinds) 40%
Turkey Oil Stones, ex. 5 toe in. ₱ lb 80¢
Queer Creek Stones, 4 to 8 in.....30¢
Queer Creek Slips.....40¢
Sand Stone.....5¢ } 40%
Belgian, German and Swaty Razor Hones.....50%
Natural Grit Carving Knife Hones, ₱ doz.....$3.00
Quick Edge Pocket Knife Hones, ₱ doz.....$3.00
Mounted Kitchen Sand Stone, ₱ doz.....$1.50 } 40%

Stoners— Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%
Whipple's Combination.....₱ doz. $2 50

Door—

Chapin-Stephens Co.....60@60&10%

Plane—

Chapin-Stephens Co.....20%

Straps— Box—

Cary's Universal, case lots....20&10&10%

Hame—

Covert's Saddlery Works.....60&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 55@60c
Socket.....doz. $1.75
Excelsior Stretcher and Tack Hammer Combined, per doz. $6.....20%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Mfg. Co., list Jan. 1, 1900.....30&5%

Sweepers, Carpet—

National Sweeper Co.:	Per doz.
Auditorium, Roller Bearing (26 in case), Nickel	$54.00
Mammoth, Roller Bearing (30 in case), Nickel	$60.00
Marion, Roller Bearing, regular finishes, full Nickel	$24.00
Marion Queen, Roller Bearing, full Nickel	$24.00
Monarch, Roller Bearing, Nickel	$22.00
Monarch, Roller Bearing, Jap'ned	$20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel	$36.00
Monarch Extra, Roller Bearing, (17-inch case), Nickel	$36.00
Monarch Extra, Roller Bearing (17-inch case), Japanned	$33.00
National Queen, Fancy Veneers	$27.00
Perpetual, Regular Bearings, Nkl.	$20.00
Perpetual, Regular Bearings, Jap.	$18.00

NOTE.—*Rebates:* 30c *per dozen on three-dozen lots;* $1 *per dozen on five-dozen lots;* $2 *per dozen on ten-dozen lots;* $2.50 *per dozen on twenty-five-dozen lots.*

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks.....90@40@10@....%
American Cut Tacks....90@25@....%
Swedes Iron Tacks. 90@30@10@5@....%
Swedes Upholsterers' Tacks..... 90@45&10@5@....%
Gimp Tacks.....90@45@10@....%
Lace Tacks.....90@45@10@....%
Trimmers' Tacks, 90@30@10@5@....%
Looking Glass Tacks. 70@10@5@....%
Bill Posters' and Railroad Tacks,... 90@45@@10....%
Hungarian Nails ....80@30@5@....%
Common and Patent Brads..... 80@10@5@....%
Trunk and Clout Nails..80@10@....%
NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10@5% on Standard Weights.****

Miscellaneous—

Double Pointed Tacks. 90 @6 tens & 5%
Steel Wire Brads, R. & E. Mfg. Co.'s list.. 50&10@60%
See also *Nails, Wire.*

Tanks, Oil—

	Each.
Emerald, S. S. & Co.	30-gal $3.25
Emerald, S. S. & Co.	60-gal. $4.00
Queen City S. S. & Co.,	30-gal $3.65
Queen City S. S. & Co.,	60-gal $4.50

Tapes, Measuring—

American Asses' Skin.....40@10@50%
Patent Leather.....25@30@5%
Steel.....40@40@10%
Chesterman's.....25@25@5%
Eddy Asses' Skin.....40@10@50%
Eddy Patent Leather.....25@30&5%
Eddy Steel.....40@40@10%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30@30&5%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger. per 100 lbs..$3.00

Thermometers—

Tin Case.....80@10@80@10@5%

Ties, Bale—Steel Wire.

Single Loop.....80@2½
Monitor, Cross Head, Etc.....70%

Brick Ties—

Niagara Brick Ties.....20&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tools—Coopers'—
L. & I. J. White ..... 20@20&5%

Hay—
Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Saw—
Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—
L. & I. J. White 25%

Transom Lifters—
See *Lifters, Transom.*

Traps—Fly—
Balloon, Globe or Acme ..... doz. $1.15@1.25; gro. $11.50@12.00
Harper, Champion or Paragon ..... doz. $1.25@1.40; gro. $13.00@13.50

Game—
Oneida Pattern ..... 75&10@75&10@5%
Newmouse ..... 45@45&5%
Hawley & Norton ..... 65@65&5%
Victor (Oneida Pattern) ..... 75@75&5%
O.C. Jump (Blake Pattern) 60&5@60&10%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes ..... 8⅓@9c
Mouse, Round or Square Wire ..... doz. 85@90c
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 7 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00
No. 2, ₱ gr. $30.00; Mouse, No. 3, $18.00 ..... 50%
J. M Mast Mfg. Co.: Per gro.

	Mouse.	Rat.
Blizzard	No. 12, $3.00	No. 1, $9 50
Old Nick	No. 30, 2.22	No. 2, 8.40
Joker	No. 5, 2.10	No. 3, 8.40

Imp'd Snap Shot, Mouse, per gro., 2 hole, $2.40.
Imp'd Snap Shot, Mouse, per gro., 4 hole, $4.20.

Trimmers, Spoke—
Bonney's Nos. 1 and 2 ..... 33⅓%
Wood's E 1 ..... 50%

Trowels—
Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ₱ gro. $5.00
Kohler's Steel Garden Trowels, 6 in. ₱ gro. $6.00
Never-Break Steel Garden Trowels ..... gro. $6.00
Rose Brick and Plastering ..... 25&5%
Woodrough & McPartlin, Plastering 25%

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern ..... 50&10%
Western Pattern ..... 60&10%
Handy Trucks ..... per doz. $16.00
Grocery ..... per doz. $15.00
Daisy Stove Trucks, Improved pattern ₱ doz. $18.50
Model Stove Trucks ..... ₱ doz. $18.50

Tubs, Wash—*No. 1 2 3*
Galvanized, per doz. $4.75 5 25 6.00
Galvanized Wash Tubs (S. S. & Co.):

No.	1	2	3	10	20	30
Per doz., net	$5.70	6.80	7.20	6.50	7 20	8.10

Twine—Miscellaneous—
Flax Twine— BC B.
No. 9, ¼ and ½-lb. Balls ..22c@24c
No. 12, ¼ and ½ lb. balls ..18c@20c
No. 18, ¼ and ½-lb. Balls ..16c@18c
No. 24, ¼ and ½-lb. Balls ..16c@18c
No. 36, ¼ and ½-lb. Balls ..15c@17c
Chalk Line, Cotton, ½-lb Balls 30c
Cotton Mops, 6, 9, 12 and 15 lb. to doz ..... 10@12c
Cotton Wrapping 5 Balls to lb ..... according to quality ..... 16c@25c
American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 13@14c
American 3 Ply Hemp, 1-lb. Balls .. 13@14c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 9c
India 3-Ply Hemp, 1-lb. Balls 9c
India 3-Ply Hemp, 1¼-lb. Balls .. 8c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls .. 9@10c
Mason Line, Linen, ½-lb. Balls ..46c
No. 264 Mattress, ¼ and ½-lb Balls 37c
Wool, 3 to 6 ply ..... 6¾@6c

Vises—
Solid Box ..... 50&10@60%

Parallel—
Athol Machine Co:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Bonney's 33⅓%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1 ..... $15.00
Pattern Makers' No. 2 ..... $12.50
Machinist and Tool Makers' No. 4 $12.50
Fisher & Norris Double Screw ..... 15&10%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co. ..... 20@30%
Merrill's 20%
Miller's Falls ..... 60&10%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists 40%
Jewelers 33⅓%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers'—
Bonney's, No. 1, $13; No. 3, $16 ..... 40%
Disston's D 3 Clamp and Guide, ₱ doz. $30 ..... 25%
Perfection Saw Clamps, ₱ doz. $8 00
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45&50%

Wood Workers'—
Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—
Bignall & Keeler Combination Pipe Vise 60%
Hollands' Combination Pipe ..... 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series ..... 60&5%
No. 870 ..... 40%

Wads—Price Per M.

	Dis. 15%
B. E., 11 up	60c
B. E., 9 and 10	70c
B. E., 8	80c
B. E., 7	80c
P. E., 11 up	$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B. E., 11 and larger	$1.70@1.75
Ely's P. E., 12 to 20	$3.00@3.25

Ware, Hollow—Cast Iron, Hollow—
Stove Hollow Ware:
Enameled ..... 55&10@60%
Ground ..... 60&10@65%
Plain or Unground ..... 65&10@70%
Country Hollowware per 100 lbs., $2 50
White Enameled Ware:
Maslin Kettles 70%
Covered Ware:
Tinned and Turned 40%
Enameled 50%
See also *Pots Glue.*

Enameled—
Agate Nickel Steel Ware ..... 50&20
Agate Nickel Steel Ware, Specials ..... 60&15%
Iron Clad Ware ..... 70&10%
Lava, Enameled ..... 40&10%
Never Break Enameled 50%

Tea Kettles—
Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45c	50c	55c	65c

Steel Hollow Ware.
Avery Spiders & Griddles ..... 65@65&5%
Avery Kettles 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles ..... 65&5%
Never Break Kettles 60%
Solid Steel Spiders & Griddles ..... 65&5%
Solid Steel Kettles 60%

Warmers, Foot—
Pike Mfg. Co., Soapstone ..... 40@40&10%

Washboards—
Solid Zinc: ₱ doz
Crescent, family size, bent frame. $3.00
Red Star, family size, stationary protector $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.65
Cable Cross, family size, stationary protector $2.90
Single Zinc Surface:
Naiad, family size, open back perforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25
Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00

Washers—Leather, Axle—
Solid ..... 80@10@80@10@10%
Patent ..... 90@90@5%
Coil: ⅛ 1 1½ 1¾ *Inch.*
11c 12c 13c 14c per box

Iron or Steel—
Size bolt .... 5-16 ⅜ ½ ⅝ ¾
Washers $5.10 4.20 2.90 2.70 2.50
In lots less than one keg add ½c per lb., 5-lb. boxes add ½c to list.

Cast Washers—
Over ½ inch, barrel lots, per lb 1¼@2c

Waterers, Hog—
Improved Dewey, ₱ doz $13.00

Wedges—
Oil Finish ..... lb. 2.35@2.40c

Weights—

Hitching—
Covert Mfg. Co. ..... 40&2%
Covert's Saddlery Works ..... 60&10%

Sash—
Per ton, f.o.b. factory:
Eastern District $23.00
Western, Central and Southern Districts market unsettled, prices ranging from $19.00@20.00

Wheels, Wall—
8-in., $1.60@1.80; 10-in., $2.00@2.25; 12-in., $2.45@2.65; 14-in., $4.00@4.25

Wire and Wire Goods—
Bright and Annealed:
6 to 9 ..... 75@75&10%
10 to 18 ..... 75&5@75&10@5%
19 to 26 ..... 75&10@10@80@5%
27 to 36 ..... 75&10@7½@80@2½%
Galvanized:
6 to 9 ..... 70@5@70@10%
10 to 18 ..... 70@5@70@10%
19 to 26 ..... 72½@72½@5%
27 to 36 ..... 70@70@5%
Coppered:
6 to 9 ..... 70@5@70@10%
10 to 18 ..... 70@10@70@10@5%
19 to 26 ..... 72½@10@75%
27 to 36 ..... 70@70@5%
Tinned:
6 to 14 ..... 72½@10@75%
15 to 18 ..... 70@10@70@10@5%
19 to 26 ..... 65@10@10@70%
27 to 36 ..... 60@60@10%
Annealed, Steel and Tinned, on Spools. ..... 70@70@10%
Brass & Copper on Spools 60@60@10%
Brass, list Feb. 26, '96 ..... 30%
Copper, list Feb. 26, '96 ..... 15%
Cast Steel Wire 50%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List June 24, 1903 ..90@10@90@10@10%

Wire Cloth and Netting—
Galvanized Wire Netting ..... 80@10@80@10@5%
Painted Screen Cloth, per 100 ft. $1.25
Standard Galv. Hardware Grade:
Nos. 2, 2½ and 3 Mesh, sq. ft. 3c
Nos. 4 and 5 Mesh, sq. ft. 3¼c
No. 6 Mesh, sq ft 3½c
No. 8 Mesh, sq ft 4c

Wire Barb—See *Trade Report.*

Wrenches—
Agricultural ..... 80&5@80&10%
Baxter Pat'rn S Wrenches ..... 70&5@70&10%
Drop Forged S ..... 45@45&5%
Acme ..... 60&10%
Alligator 70%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S ..... 35&5%
Adjustable S Pipe 40%
Brigg's Pattern ..... 30&10%
Combination Black ..... 40&5%
Combination Bright 40%
Merrick's Pattern 50%
No. 3 Pipe, Bright 55%
Boardman's 33⅓%
Coes' Genuine Knife Hdl. ..... 40&10&5&5%
Coes' Genuine Steel Hdl. ..... 40&10&5&5%
Coes' Genuine Key Model ..... 40&10&5&5%
Coes' "Mechanics' ..... 40&10&10&5&5%
Donohue's Engineer ..... 40&10%
Dudly Combination ..... 50&10&5%
Dudly Pipe ..... 50&10&5%
Dudly Adjustable Pipe ..... 40&10&5%
Eagle ..... 50&10%
Elgin Wrenches 40%
Elgin Monkey Wrench Pipe Jaws 33⅓%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots ..... 50&5%
Less than case lots 50%
Improved Pipe (W & B.) 60%
Solid Handles, P.S. & W ..... 50@50&5%
Stillson 65%
Triumph ..... 60&10%
Vulcan Chain 50%

Fruit Jar—
T & B Fruit Jar Wrenches ..... ₱ gro $9.00
Triumph Fruit Can Wrenches, ₱ gro $9.60
Triumph Fruit Jar Holders, ₱ gro. $15.00

Wrought Goods—
Staples, Hooks, &c., list March 17 '92 ..... 90@90&5%

Yokes, Neck—
Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters' .. list net

Zinc—
Sheet ..... per 100 lbs. $6.15@6 40

PAINTS, OILS AND COLORS.

White Lead, Zinc, &c.
Lead, English white, in Oil ..... 9½@ 9¼
Lead, American White, in Oil:
Lots of 500 ℔ or over ..... @ 6½
Lots less than 500 ℔ ..... @ 7
In Barrels ..... @ 6
Lead, White, in oil, 25 ℔ tin pails, add to keg price ..... @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price ..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price ..... @ 1½
Lead, American, Terms: For lots 12 tons and over ½¢ brake; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice; for lots of less than 500 lbs. net.
Lead White, Dry in bbls ..... @ 6
Zinc, American, dry ..... ₱ ℔ 4½@ 4½
Zinc, French:
Paris, Red Seal, dry 7½
Paris, Green Seal, dry 9½
Antwerp Red Seal, dry 6½
Antwerp, Green seal, dry 8¼
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over ..... 11¼@11¾
Lots of less than 1 ton ..... 11¾@12
Zinc, V. M. French, in Poppy Oil, Red Seal:
Lots of 1 ton and over ..... 10 @10½
Lots of less than 1 ton ..... 10½@10¾
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%: 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon ..... ₱ ℔ 5 @10
Black, Drop, Amer ..... 4 @ 6
Black, Drop, Eng ..... 5 @15
Black, Ivory ..... 16 @20
Lamp, Com ..... 4½@ 6
Blue, Celestial ..... ₱ ℔ 4 @ 6
Blue, Chinese ..... 20 @ 32
Blue, Prussian ..... 27 @30
Blue, Ultramarine ..... 4½@15
Brown, Spanish ..... ½@ 1
Carmine, No. 40 ..... ₱ ℔ $3.75@4.00
Green, Chrome, ordinary ..... 3½@ 6
Green, Chrome, pure ..... 17 @25
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6½
Lots less than 500 ℔ ..... @ 7
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over ..... @ 6½
Lots less than 500 ℔ ..... @ 7
Ocher, American ..... ₱ ton $8.50@16.00
Orcher, American Golden ..... 2½ @ 3
Orcher, French ..... 1¾ @ 2¼
Orcher, Foreign Golden ..... 3 @ 4
Orange Mineral, English ..... ₱ ℔ 8¼@10½
Orange Mineral, French ..... 10¼@11¼
Orange Mineral, German ..... 7 @10
Orange Mineral, American ..... 8 @ 8¼
Red, Indian, English ..... 4½@ 8½
Red, Indian, American ..... 3 @ 3¼
Red, Turkey, English ..... 6 @
Red, Tuscan, English ..... 7 @10
Red, Venetian, Amer., ₱ 100 ℔ $0.50@1.50
Red Venetian, English, ₱ 100 ℔ 1.25@1 75
Sienna, Italian, Burnt and Powdered ..... ₱ ℔ 3 @ 6½
Sienna, Ital., Raw, Powd ..... 3 @ 6½
Sienna, American, Raw ..... 1½@ 2
Sienna, American, Burnt and Powdered ..... ₱ ℔ 1½@ 2
Talc, French ..... ₱ ℔ 1 @ 1½
Talc, American ..... 75 @1.25
Terra Alba, French, ₱ 100 ℔ .95 @1.00
Terra Alba, English ..... 95 @1.00
Terra Alba, American No. 1 ..... 70 @80
Terra Alba, American No. 2 ..... 45 @55
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer ..... 1½@ 2
Umber, Raw, Amer ..... 1½@ 2
Yellow, Chrome ..... 11 @14
Vermilion, American Lead ..... 10 @25
Vermilion, Quicksilver, bulk ..... @65
Vermilion, Quicksilver, bags ..... @66
Vermilion, English, Import ..... 75 @80
Vermilion, Chinese ..... @0.90@1.00

Colors in Oil.
Black, Lampblack ..... 12 @14
Blue, Chinese ..... 36 @46
Blue, Prussian ..... 32 @36
Blue, Ultramarine ..... 13 @16
Brown, Vandyke ..... 11 @14
Green, Chrome ..... 10 @15
Green, Paris ..... @24
Sienna, Raw ..... 12 @15
Sienna, Burnt ..... 12 @15
Umber, Raw ..... 11 @14
Umber, Burnt ..... 11 @14

Miscellaneous.
Barytes, White Foreign, ₱ ton $17.50@20.00
Barytes Amer. floated ..... 18.50@20.00
Barytes, Crude, No. 1 ..... 10.00@11.00
Chalk, in bulk ..... ₱ ton 3.00@ 3.25
Chalk, in bbls ..... ₱ 100 ℔ .. @ 35
China Clay, English ..... ₱ ton 11.00@17.00
Cobalt, Oxide ..... ₱ 100 ℔ 2.50@ ....
Whiting, Common ..... ₱ 100 ℔ .45@ .48
Whiting, Gilders ..... .55@ .57
Whiting, extra Gilders' .... .58@ .60

Putty.
In bladders ..... 1¾@2¼
In bulk ..... 1¼@2
In cans, 1 ℔ to 5 ℔ ..... 2½@4¼
In cans 12 ½℔ to 25 ℔ ..... 1½@2¼

Spirits Turpentine.
In Oil bbls ..... 56 @5d½¢
In machine bbls ..... 56½@57 ¢

Glue.
Cabinet ..... ₱ ℔ 11 @15
Common Bone ..... 6 @ 8
Extra White ..... 18 @24
Foot Stock, White ..... 11 @14
Foot Stock, Brown ..... 7 @10
German Bides ..... 12 @18
French ..... 10 @40
Irish ..... 13 @16
Low Grade ..... 8 @11
Medium White ..... 14 @17

Gum Shellac—Cts. per lb.
Bleached, Commercial ..... 45 @..
Bone Dried ..... 56 @..
Button ..... 50 @60
Diamond ..... 60 @..
Fine Orange ..... 53 @58
A. C. Garnet ..... 47 @48
D. C ..... 95 @..
Octagon B ..... 57 @58
T. N ..... 51 @53
V. S. O ..... 63 @65

Animal, Fish and Vegetable Oils.
Linseed, City, raw ..... ₱ gal. 39 @40
Linseed, City, boiled ..... 41 @42
Linseed, State and West'n, raw 37 @38
Linseed, raw Calcutta seed ..... @35
Lard, Prime, Winter ..... 55 @57
Lard, Extra No. 1 ..... 48 @51
Lard, No. 2 ..... 36 @38
Cotton-seed, Crude, f.o.b mills 21½@22
Cotton-seed, Summer Yellow, prime ..... 28½@29
Cotton-seed Summer Yellow, off grades ..... 27 @28
Sperm, Crude ..... 60 @..
Sperm, Natural Spring ..... 60 @62
Sperm, Bleached Spring ..... 62 @63
Sperm, Natural Winter ..... 63 @65
Sperm, Bleached Winter ..... 65 @67
Tallow, Prime ..... 48 @49
Whale, Crude ..... @..
Whale, Natural Winter ..... 46 @47
Whale Bleached Winter ..... 48 @49
Menhaden, Brown, Strained ..... 31 @32
Menhaden, Light Strained ..... 32 @33
Menhaden, Bleached Winter ..... 34 @35
Menhaden, Ex. Bleached Winter 36 @37
Menhaden, Southern ..... 20@..
Cocoanut, Ceylon ..... 5½@ 6½
Cocoanut, Cochin ..... 6½@ 6¾
Cod, Domestic ..... 38 @39
Cod, Newfoundland ..... 39 @40
Red Elaine ..... 43 @44
Red Saponified ..... ₱ ℔ 38@37½
Olive, Italian, bbls ..... 47 @ 51
Neatsfoot prime ..... 54 @ ..
Palm, prime, Lagos ..... ₱ ℔ 5½@ 6

Mineral Oils.
Black, 20 gravity, 25@30 cold test ..... ₱ gal. 13 @14
Black, 29 gravity, 15 cold test. 14 @15
Black, Summer ..... 13 @14
Cylinder, light filtered ..... 20½@21½
Cylinder, dark filtered ..... 18½@19½
Paraffine, 903-907 gravity ..... 15 @15½
Paraffine, 903 gravity ..... 14 @14½
Paraffine, 885 gravity ..... 11½@12½
Paraffine, red ..... 14 @15½
In small lots ½¢ advance.

For the Table of "Current Metal Prices" see the First Issue of Every Month.